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UNIVERSITY OF GALWAY



Multi-Sensor Demonstration Application Manual

Skaiste Motiejunaite

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1 INTRODUCTION

The purpose of this manual is to enable users, developers and teaching staff to operate, maintain and update the Multi-Sensor Demo application. This application is designed to demonstrate the operation of multiple sensor technologies within a unified interface, hosted on the sensor rig. The manual covers startup procedures, application usage, maintenance operations, updating workflow, and troubleshooting common issues.

2 SYSTEM OVERVIEW

The Multi-Sensor Demo Application operates on a pre-configured sensor rig designed for live-streaming, status monitoring and basic interaction with multiple connected sensors. An external monitor is required for normal operation.

The application is configured to auto-launch at system startup for a seamless user experience.

2.1 SENSOR RIG SETUP

Hardware Specifications:

- Processor: Intel i7 3.2GHz.
- Ram: 16GB.

Sensors:

- Cepton LiDAR.
- Triton RGB (not used).
- Prophesee Event-Driven Camera.
- Thermal CCTV Camera.

Development Environment:

- Developed on Python 3.11.9.
- Certain Python modules used are not yet fully compatible with later versions.
- Recommended to maintain a Python 3.11.9 virtual environment to ensure compatibility.

Note: The application can also run on a laptop using only the RGB modules (with the laptop's internal camera). Testing showed better performance on a 10th Gen i7 laptop with 16GB RAM, compared to a slightly degraded performance on a newer i5 with 16GB RAM.

Required External Equipment:

Device	Notes
Monitor	External display required via HDMI. (Used: Dell 75 Monitor: C7520QT)
USB Webcam	Any USB webcam supported. (Used: Microsoft LifeCam HD-3000)
Mouse & Keyboard	Standard USB peripherals. (Used: Logitech K400)

Note: Device Specification sheets are provided in appendix A.1 **User Guides for External Sensor Rig Equipment**

3 SYSTEM STARTUP

This section outlines how to correctly power on the sensor rig and launch the Multi-Sensor Demo Application.

3.1 POWERING ON

1. Ensure the rig is connected to AC power.
2. Connect an external monitor to the rig via HDMI.
3. Connect the keyboard and mouse via USB port (if not already connected).
4. Confirm that any required WiFi or USB modules are plugged in.
5. Turn the power switch located in the main control panel to turn on the rig.



Figure 3.1 Sensor Rig Switch Location, Switch in On Position

3.2 APPLICATION STARTUP

The application is configured to start automatically at system boot using a bash startup script.

If the application starts automatically:

- Proceed directly to [Section 4: Sensor Connections].

If the application does not start automatically: You can manually launch it using either of the following methods:

1. Desktop Shortcut:
 - Double click the application icon located on the desktop.

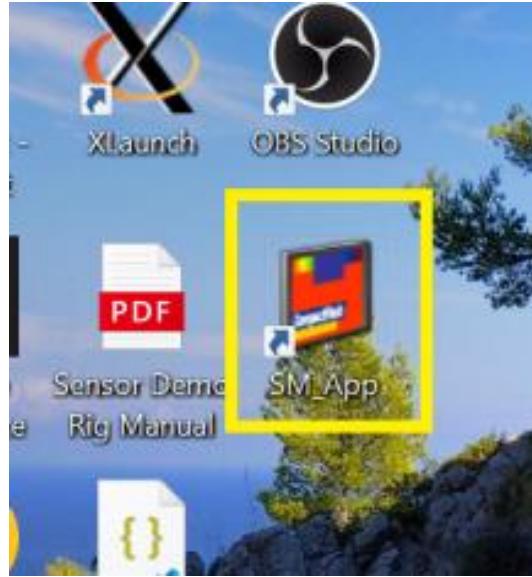


Figure 3.2 Desktop App Shortcut

2. Manual Terminal Launch
 - Open a terminal window.
 - Navigate to the project directory:
`"C:\Users\AvlSensorSystem\Desktop\SkaisteMotiejunaite_DemoApp\Thesis"`
 - Run the application manually: `python .\main.py`.

Note: If the application does not start, refer to [Section 7: Troubleshooting] for more detailed debugging steps.

4 USER MANUAL

This section explains how to use the Multi-Sensor Demo application, including the home screen layout, sensor connection checking and navigation.

4.1 HOME SCREEN OVERVIEW

Upon launch, the home screen is displayed. It provides buttons for accessing each sensor page, and a connection status bar at the bottom left.

The connection status bar displays the real-time connection status for each sensor:

- Green: Connected.
- Red: Disconnected.
- Orange: Loading (during startup).

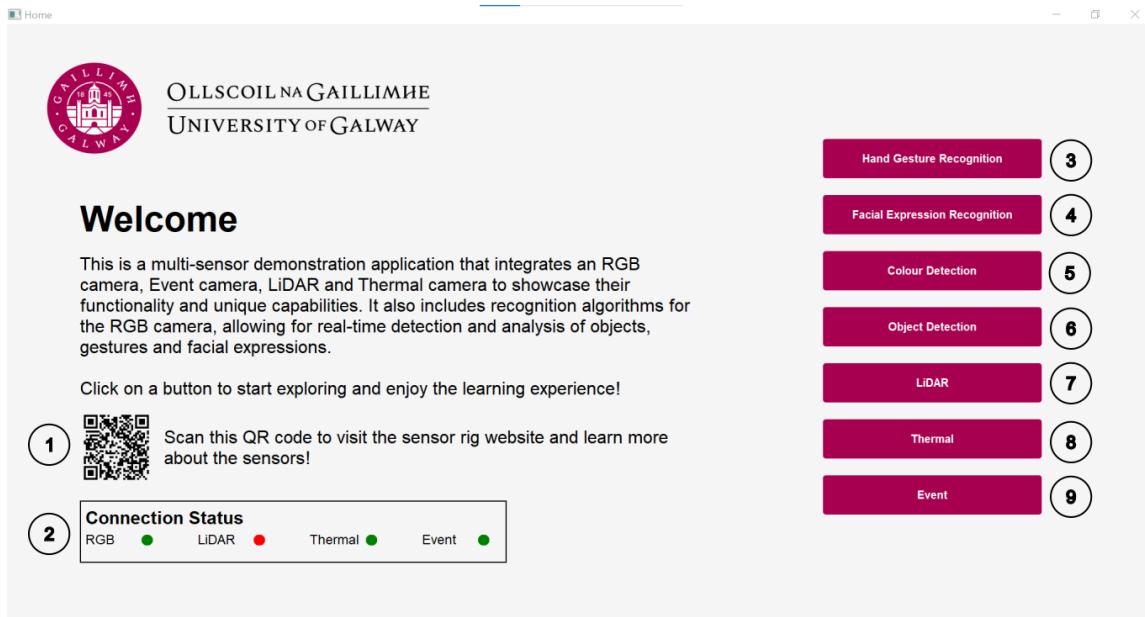


Figure 4.1 Home Screen with labelled components

No. Component	Component Description
1 Scannable QR code	Links to Sensor Rig Website
2 Connection Status Bar	Shows sensor connection states
3 Hand Gesture Recognition Button	Opens the HGR page
4 Facial Expression Recognition Button	Opens the FER page
5 Colour Detection Button	Opens the general page (in colour mode)
6 Object Detection Button	Opens the general page (in object mode)
7 LiDAR Button	Opens the LiDAR page
8 Thermal Button	Opens the thermal camera page
9 Event Button	Opens the event camera page

Table 4.1 Component Dictionary

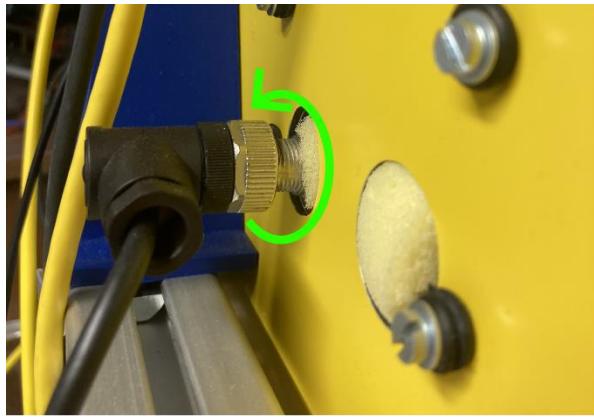
4.1.1 Checking Sensor Connections

If any sensors appear as Disconnected (Red) on the status bar:

LiDAR Sensor:

- Check physical connection to the rig.
- Plug it back if necessary.

Note: You should hear the LiDAR operating when it is properly connected.



Disconnected



Connected

Figure 4.2 LiDAR connection (Connected and Disconnected set)

RGB camera:

- Ensure USB webcam is connected to the USB port.

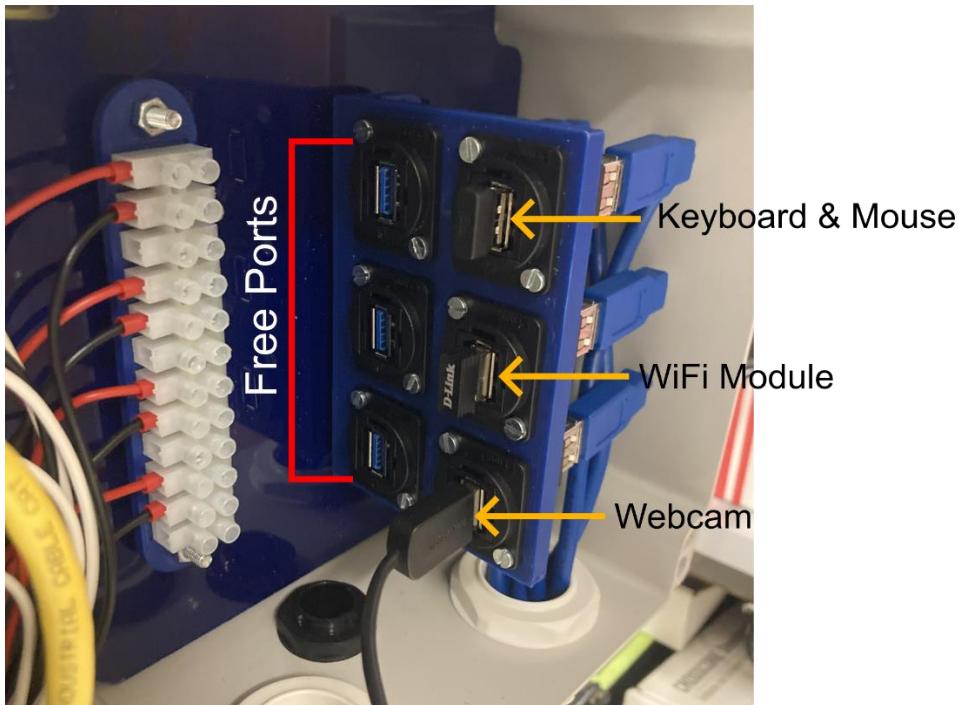


Figure 4.3 USB port connections

If connections appear correct but sensors are still not showing up, check the connections using the terminal: `arp -a`.

Cross reference the IP addresses with the known list:

Sensor	IP Address
LiDAR	169.254.65.122
Event	169.254.10.1
Thermal	192.168.2.1
HDR RGB (not used)	169.254.186.74

Table 4.2 Table of known IP addresses

4.1.2 Navigating the application

- Opening a Sensor Page:
Click the corresponding button on the Home Screen.
- Returning to the Home Screen:
Simply close the sensor page by clicking the 'X' in the top right corner.
- Exiting the Application:
Click the 'X' in the top right corner of the Home Screen.
Confirm exit by clicking 'Yes' when the confirmation dialog appears.

Each sensor page typically includes:

- A live-stream window.
- A brief description or operational status text.

Note: Most pages are view-only. No interactive controls are available unless specifically mentioned.

5 MAINTENANCE AND UPDATES

This section provides step-by-step instructions for maintaining, updating and expanding the application. It covers updating algorithms, modifying the UI, adding new sensors and expanding functionality. Troubleshooting tips are also included where necessary.

5.1 SETTING UP THE APPLICATION

Setup only if the rig has been wiped, if the rig is there you can go to step 3 to get the latest update.

1. Git clone:

```
git clone https://github.com/SkaisteMot/Thesis.git
```

2. Install Requirements:

```
pip install -r .\requirements.txt
```

3. Pull the latest updates:

```
git pull
```

Note: Some dependency issues may occur. Refer to section 7 (troubleshooting).

5.2 EDITING THE BASH STARTUP SCRIPT

To ensure the application launches automatically on system startup, a shortcut to the launch script is placed in the Windows Startup folder.

Locating the Startup Folder:

1. Press **Win + R** to open the Run dialog.
2. Type **shell:startup** and press Enter.

Contents of the startup script:

```
@echo off
echo Running script1.bat
start /b "" cmd /c
"C:\Users\AvlSensorSystem\Desktop\SkaisteMotiejunaite_DemoApp\Thesis\run_Demo.bat"
"
```

This script simply redirects execution to the main script run_Demo.bat

Editing run_Demo.bat:

This is where you can customise the application launch behaviour. Below is the breakdown of its default contents.

```
@echo off
REM Set the working directory to the project root
cd /d C:\Users\AvlSensorSystem\Desktop\SkaisteMotiejunaite_DemoApp\Thesis

REM Activate the virtual environment
call .\.venv\Scripts\activate

REM Run the Python application
python
C:\Users\AvlSensorSystem\Desktop\SkaisteMotiejunaite_DemoApp\Thesis\main.py
```

What each line does:

- **@echo off** – Prevents command output from being displayed.
- **cd /d ...** - Changes directory to the root folder of the application.
- **call .\.venv...** - Activates the virtual Python environment.
- **python ... \main.py** – Launches the main PyQt application.

When and where to edit:

- To modify startup behaviour (e.g. hide terminal, add delays, log output), edit startup script.
- To change application-specific behaviour (e.g. virtual environment, main script) edit run_Demo.bat.

After making edits, you can either:

- Run the modified .bat file manually to test the changes.
- Or reboot the system to confirm it launches correctly at startup.

5.3 UPDATING PAGES OR ALGORITHMS

When updating algorithms or UI pages, consider the following:

Note: All file locations taken from parent (Thesis) folder

5.3.1 Colour Detection

Files related to colour detection:

- Algorithm: Algorithms\Objects\colour_detection.py
- UI Page: App\pages\general_page.py
- CSV File: Datasets\colour_ranges.csv (contains the defined colour ranges)

To add new colours:

- Add the new colour to the CSV file (provide the HSV min and max values and a name).
- In the algorithm file, update the BGR colour dictionary with the new colour definition (in BGR).
- The UI page will automatically update to reflect the new colour.

Note: The colour definition in the BGR dictionary will be used to draw the bounding box around any colour that fits within the defined range. Changes to the UI should not affect the algorithm.

5.3.2 Object Detection

Files related to object detection:

- Algorithm: Algorithms\Objects\object_detection.py
- YOLO Model: Algorithms\Objects\yolov8n.pt
- UI Page: App\pages\general_page.py

To update the YOLO model or version:

1. Change the model path in the algorithm file to the new model or version.
2. If needed, rerun the script to download the new model, or manually add the model file.

3. No UI page modifications are needed unless you want to display the model name or add a new label/text/instruction.

5.3.3 Hand Gesture Recognition

Files related to hand gesture recognition:

- **Algorithm:** Algorithms\Body\hand_gesture_test.py
- **UI Page:** App\pages\hand_gesture_page.py
- **Task File:** Algorithms\Body\gesture_recognizer.task

To update the model or icons:

1. Change the model file in the algorithm.
2. To update images or icons, update the dictionary paths in the UI page file
3. Do not change the label names unless you are changing the model

Note: For consistent emoji display, the font family must be set to “Segoe UI”. The dictionary names/labels are matched to what MediaPipe outputs.

5.3.4 Facial Expression Recognition

Files related to facial expression recognition:

- **Algorithm:** Algorithms\Body\emotion_recognition.py
- **UI Page:** App\pages\facial_expression_page.py

For icon updates, modify the path in the page dictionary without changing the name unless the model is being changed and requires matching names.

5.3.5 LiDAR

Files related to LiDAR:

- **UI Page (contains UI and streaming logic):** App\pages\lidar_page.py

To modify the display angle/setup:

- Adjust the azimuth parameters in the code.
- You can print the values as they change, run the LiDAR page, set up the view that you want.
- Copy these values and set them as default.

5.3.6 Event-based (Neuromorphic)

Files related to event-based:

- **UI Page (contains UI and streaming logic):** App\pages\event_page.py

The most likely modification would be updating the window handle for reparenting, which involves changing the name that you are looking for in the window detection process.

5.3.7 Thermal/Infrared

Files related to thermal:

- UI Page (contains UI and streaming logic): App\pages\thermal_page.py

Most modifications would involve text changes which can be updated directly in the code.

5.4 EDITING THE HOME PAGE

Files related to the home page:

- Main (launcher): main.py
- UI Page: App\pages\home_page.py
- UI File: App\home_page.ui
- Style Sheet: App\styles\home.qss
- Utility: utils.py

For major edits, it is recommended to use QtCreator (link to download or the documentation for that). For smaller edits, directly edit the home_page.ui file

Note: Saving .ui files from QtCreator will cause minor XML errors. These are easily fixable, but for a small change (like text adjustments), direct editing in the file is simpler. For larger changes that benefit from visualisation, use QtCreator despite the need for error correction afterward.

To update button colours, modify the style sheet (home.qss)

5.5 CONNECTING NEW SENSORS

To add a new sensor:

1. Detect the New Sensor IP:
 - Use `arp -a` in the terminal to detect the sensor's IP address.
 - Cross-reference the IP with the list in the appendix or use a heuristic method (plug/unplug the sensor and check which IP appears/disappears).
2. Update the Connection Check Logic:
 - In utils.py:
 - Add the new IP to the devices array.
 - In home_page.py:
 - In `update_connection_status` function, initialise a checker for the new sensor.
 - Add a new circle to represent the sensor's connection status.
 - Ensure the name passed to the checker matches the name assigned in the utils file.
 - In home_page.ui:
 - Add new QLabel widgets to represent the sensor's connection.

- Search for existing labels (eg 'rgblabel') and copy the code.
- Rename and adjust the Y position to move it along the status bar.
- You may need to update the border of the connection status panel.

Note: If using QtCreator, refer to the troubleshooting guide for post-save modifications.

5.6 MODIFYING QR CODE LAYOUT

To modify the QR code layout:

1. The QR code settings are defined in the utils.py file.
2. To update a QR code:
 - Replace the current QR code in the Dataset/QRCodes/ folder with the new one.
 - For simplicity, keep the same filename to avoid updating path references in the code.
 - If you change the filename, update the corresponding QR code reference in the relevant page files.

Note: Any new QR codes should be generated with a transparent background.

5.7 ADDING NEW BUTTONS/ALGORITHMS

To add new buttons or algorithms:

1. Add the new Algorithm:
 - Place the algorithm in the appropriate folder (eg Algorithms/).
2. Update the Home page UI:
 - In home_page.ui:
 - Add a new QPushButton for the algorithm.
 - Search for 'QPushButton' and copy/paste the pattern of existing buttons.
 - In home_page.py:
 - Initialise the button and connect it to the corresponding page.
 - Add a tooltip to show when hovering over the button.
 - Define the function that opens/shows the page.

6 WEBSITE INTEGRATION

The application includes QR codes that link to an associated website hosted on GitHub Pages. These QR codes are displayed within the PyQt application to give users quick access to additional information about each sensor and algorithm.

6.1 EDITING THE WEBSITE

Website files should be edited locally. To preview your changes before pushing:

- Open Chrome (or any browser)
- Press `CTRL + O` (in a fresh tab)
- Navigate to the website folder and select the index.html file

You should now be able to view local changes without needing a server.

Once you are happy with the changes made and want to publish them:

- Commit and push the updates to the main branch on GitHub.
- GitHub pages will automatically update the live site using the content from the main branch.

Important: Only push changes after ensuring everything is correct and functional (test the navigation/links) to avoid showing unfinished or broken content.

6.2 QR CODE GENERATION AND UPDATING

If you need to update a QR code:

- Use a free QR code generator like <https://qrgenerator.org/transparent-qr/>
- Make sure to download the QR code with a transparent background
- Recommended format: SVG with transparency.
- Place the new QR code in the `Dataset/QRCodes/` folder
- Replace the existing file (keeping the same name) or update references if you change the file name

6.3 FILE STRUCTURE OVERVIEW

The website has a simple structure:

- Index.html – Main page
- Individual pages for each sensor
- References page
- CSS files for styling the navigation bar and general page layout
- Images and diagrams

7 TROUBLESHOOTING

This section outlines common issues that may occur during setup or runtime, along with their resolutions.

7.1 GENERAL REQUIREMENTS/SETUP PYTHON ERRORS

These are typically errors encountered during Python environment setup or application launch.

DLL Error on Launch

Cause: Incompatible or missing version of MediaPipe

Solution: `pip install mediapipe==0.10.14`

ModuleNotFoundError: No module named ‘moviepy’

Cause: The FER library uses moviepy internally but may not auto-install it.

Solution: `pip install moviepy==1.0.3`

ModuleNotFoundError: No module named ‘tensorflow’

Solution: `pip install tensorflow`

7.2 QT CREATOR

When designing UI with Qt Creator, its .ui files may contain enum or alignment formats incompatible with PyQt5’s uic parser. Manual corrections may be necessary:

Enum Format Corrections

1. Qt Creator Output:

```
<set>Qt::AlignmentFlag::AlignLeading|Qt::AlignmentFlag::AlignLeft|Qt::AlignmentFlag::AlignTop</set>
```

Required Format:

```
<set>Qt::AlignLeading|Qt::AlignLeft|Qt::AlignTop</set>
```

2. Qt Creator Output: `<enum>QFrame::Shape::Box</enum>`

Required Format: `<enum>QFrame::Box</enum>`

3. Qt Creator Output: `<enum>QFrame::Shadow::Plain</enum>`

Required Format: `<enum>QFrame::Plain</enum>`

To fix, open the .ui file and use Find and Replace to correct these values before running the application.

8 APPENDIX

A.1 USER GUIDES FOR EXTERNAL SENSOR RIG EQUIPMENT

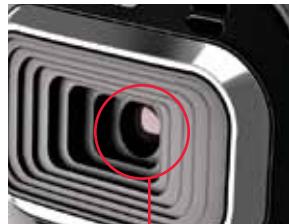
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Post true HD video to online video sites.

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For cinematic video recording.

Clear, High Quality Video

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Crystal-clear audio and built-in unidirectional microphone with acoustic noise cancellation.

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Microsoft® LifeCam HD-3000 for Business



System Requirements

Windows® 7, Windows Vista®, Windows XP (with Service Pack 2 (SP2) or higher); VGA video calling: Intel Dual-Core 1.6 GHz or higher, 1 GB of RAM; 720p HD recording: Intel Dual-Core 3.0 GHz or higher, 2 GB of RAM

1.5 GB free	CD
USB 2.0 Required	Windows-compatible speakers or headphones

You must accept the enclosed License Agreement during software Setup before you can use the software accompanying this product.

Internet functions and Software Installation also require:
Internet Explorer® 7/8; 25 MB hard-drive space typically required. Broadband required. Toll charges may apply.

¹ For HD video chat, both users must have Windows Live® Messenger 2011 or Microsoft Lync™ installed (requires Windows Vista or Windows 7), Intel Quad Core 2.0GHz (or higher) processor, compatible HD webcams, and high-speed internet access. HD display recommended.

² Limited Warranty and License Agreement available at: www.microsoft.com/hardware/warranty

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Microsoft Ship Date
March 2011

for Business
Microsoft Part Number
T4H-00002

UPC Code
885370228106

Estimated for Business Price
\$39.95

Weight: XX.XX lbs
Dimensions: 5.31" L x 5.31" W x 2.17" D

Masterpack - Qty 5
Weight: 2.50 lbs
Dimensions: 11.13" L x 5.75" W x 5.88" D

50-Pack for Enterprise

Microsoft Part Number
S9K-00001

UPC Code
885370313246

Estimated 50-Pack Price
\$1,799.95

Masterpack - Qty 50
Weight: 13.71 lbs
Dimensions: 21.14" L x 12.28" W x 6.89" D



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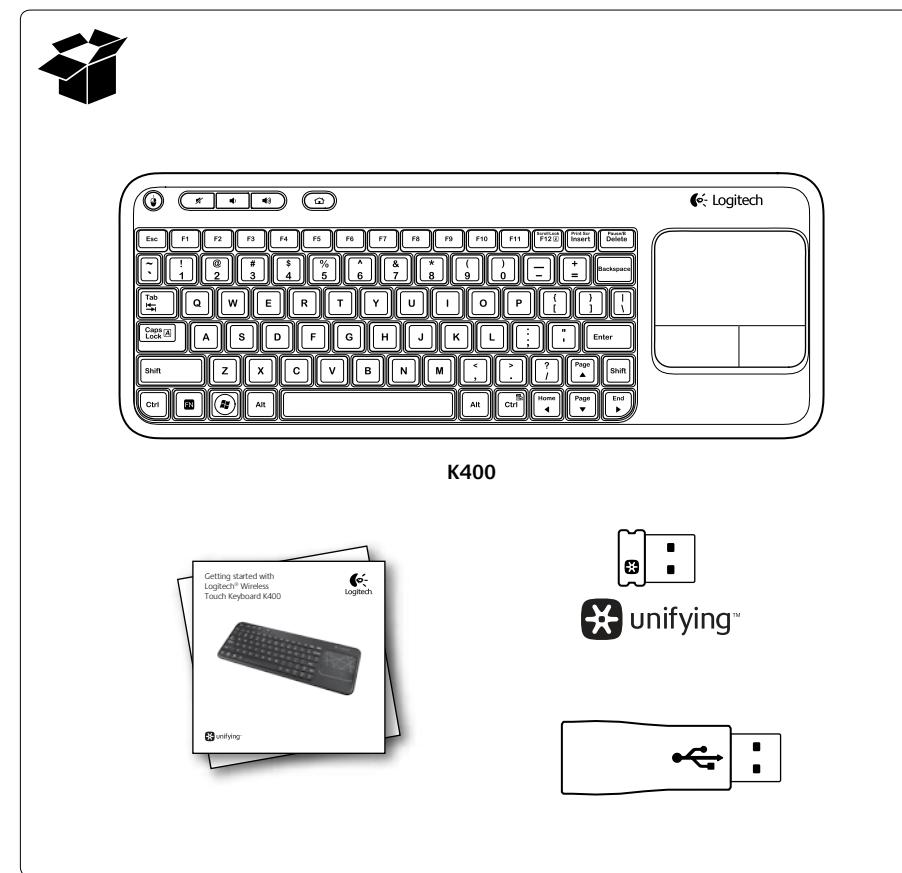
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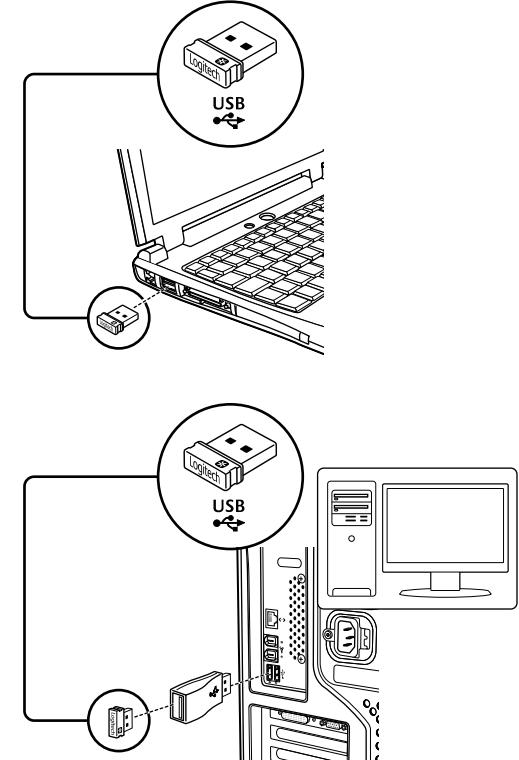
Getting started with Logitech® Wireless Touch Keyboard K400



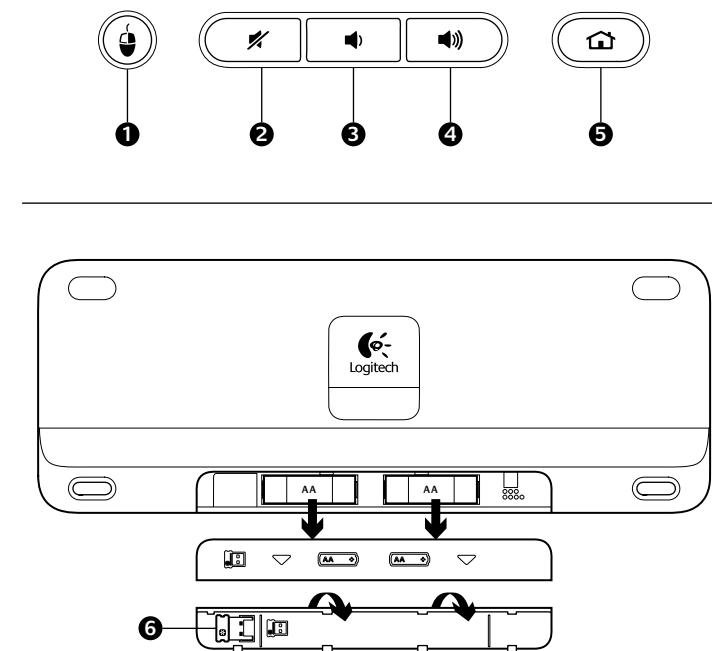
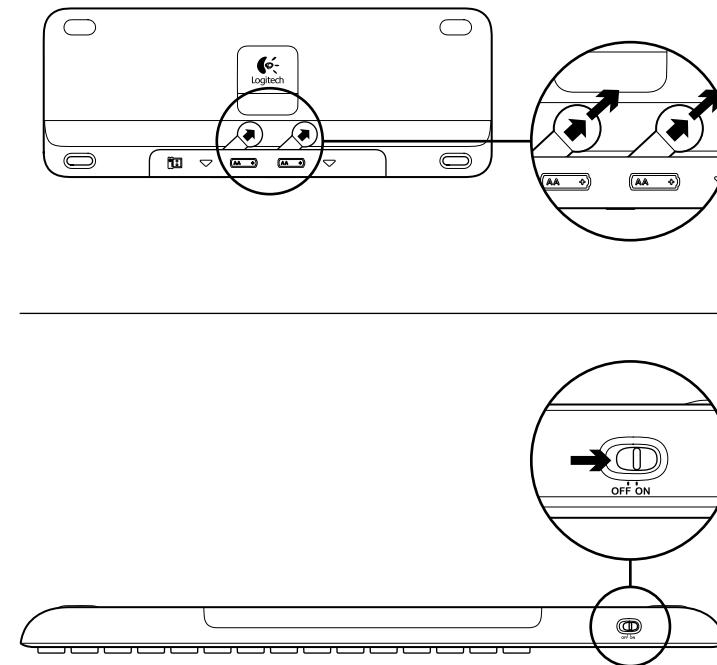
unifying™



1



2



English

Features

Hotkeys

1. Left mouse click
 2. Mute
 3. Volume down
 4. Volume up
 5. Internet home
- Battery compartment**
6. Nano receiver storage

Nederlands

Functies

Sneltoetsen

1. Linksclklikken
 2. Sessie
 3. Volume lager
 4. Volume hoger
 5. Internet startpagina
- Batterijhouder**
6. Nano-ontvangeropslag

Türkçe

Özellikler

Hızlı erişim tuşları

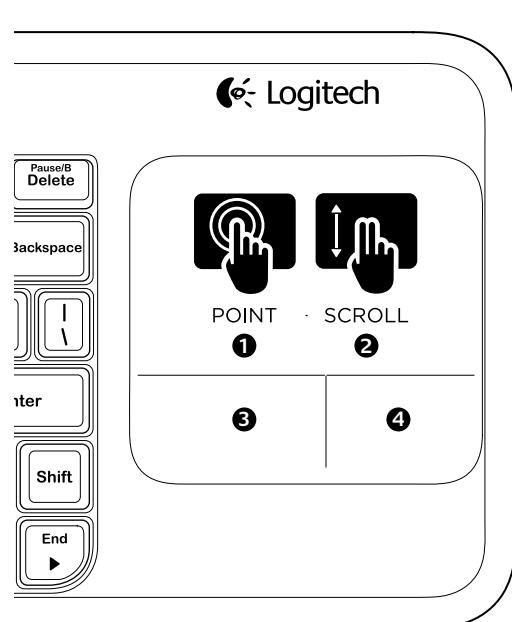
1. Sol fareye tıklama
 2. Sesiz
 3. Ses kısma
 4. Ses açma
 5. Internet giriş sayfası
- Pil bölmesi**
6. Nano alıcı saklama bölmesi

العربية

الميزات

مفاتيح التسجيل

1. الفرز بزر الماوس الأيسر
2. كتم الصوت
3. خفض مستوى الصوت
4. رفع مستوى الصوت
5. صفحة الانترنت الرئيسية
6. تجزير البطارية
7. تجزير المستقبل الصغير



English

Touchpad gestures

Point and scroll

1. Point and slide one finger anywhere on the touchpad to move the screen pointer.
 2. Scroll with two fingers, up or down.
- Left and right click**
3. Press for left mouse click.*
 4. Press for right mouse click.*
- *You can also tap the touchpad surface to perform a click. To disable touchpad tap, press the Fn-key plus the left mouse button. To re-enable touchpad tap, press the Fn-key plus the left mouse button again.

Tips for a personalized experience!
To adjust your touchpad experience, download and install software from www.logitech.com/support/K400. The software allows you to modify the speed of the on-screen pointer, adjust scrolling, and disable touchpad tap.

Français

Gestes de contrôle du touchpad

Pointer et faire défiler

1. Pointez et glissez un doigt à n'importe quel endroit du touchpad pour déplacer le pointeur à l'écran.
 2. Défilez vers le haut ou vers le bas en utilisant deux doigts.
- Cliquer avec le bouton droit et le bouton gauche**
3. Appuyez pour cliquer avec le bouton gauche de la souris.*
 4. Appuyez pour cliquer avec le bouton droit de la souris.*
- *Vous pouvez également cliquer en tapant brièvement sur la surface du touchpad.

Pour désactiver la commande de pression (Taper) du pavé tactile, appuyez sur la touche Fn et le bouton gauche de la souris. Pour réactiver la commande de pression, appuyez à nouveau sur la touche Fn et le bouton gauche de la souris.

Conseils pour personnaliser votre clavier:

Pour adapter le fonctionnement du touchpad à vos besoins, téléchargez et installez le logiciel à partir du site www.logitech.com/support/K400. Le logiciel vous permet de modifier la vitesse du pointeur à l'écran, d'ajuster le défilement et de désactiver le touchpad.

Nederlands

Touchpadbewegingen

Aanwijzen en scrollen

1. Wijs met één vinger en sleep deze over het touchpad om de cursor op het scherm te verplaatsen.
2. Gebruik twee vingers als u omhoog of omlaag wilt scrollen.

Links- en rechtsklikken

3. Druk in voor linksklikken.*
 4. Druk in voor rechtsklikken.
- *U kunt ook op de touchpad tikken om een klik uit te voeren. Als u tikt op de touchpad wilt uitschakelen, drukt u op de Fn-toets en de linkermuisknop. Druk nogmaals op de Fn-toets en de linkermuisknop om tikkend op de touchpad weer in te schakelen.

Tips voor een persoonlijke ervaring!

Download en installeer de software via www.logitech.com/support/K400 om de werking van uw touchpad aan te passen. Met de software kunt u de snelheid van de cursor op het scherm aanpassen, de scrollfunctie configureren en het tikken op het touchpad uitschakelen.

Ελληνικά

Kινήσεις touchpad

Κατόδειξη και κύλιση

1. Τοποθετήστε ένα δάχτυλο οπουδήποτε πάνω στο touchpad και σύρετε το για να μετακινήσετε το δείκτη της οθόνης.
2. Προγραμματίστε κύλιση με τα δύο δάχτυλα προς τα πάνω ή προς τα κάτω.

Αριστερό και δεξιό κλικ

3. Πατήστε για αριστερό κλικ ποντικιού.*
4. Πατήστε για δεξιό κλικ ποντικιού.

*Μπορείτε, επίσης, να πατήσετε στην επιφάνεια του touchpad για να κάνετε κλικ. Για να απενεργοποιήσετε το πλήκτρο Fn και το αριστερό κουμπί του ποντικιού. Για να ενεργοποιήσετε εκ νέου το Πάτταμα στο touchpad, πατήστε ξανά το πλήκτρο Fn και το αριστερό κουμπί του ποντικιού.

Συμβουλές για εξαπομπέμένη χρήση!

Αν θέλετε να προσαρμόσετε τη χρήση του touchpad, κάντε λήψη και εγκατάσταση λογισμικού από τη διεύθυνση www.logitech.com/support/K400. Το λογισμικό αδιαπέραντα να τροποποιεί την ταχύτητα του δείκτη που εμφανίζεται στην οθόνη, να προσαρμόσετε την κύλιση και να απενεργοποιήσετε το touchpad.

Türkçe

Dokunmatik yüzey hareketleri İşaretleme ve kaydırma

1. Ekran işaretçisini hareket ettirmek için bir parmağınızla dokunmatik yüzeyde herhangi bir yeri işaretleyip kaydırın.
2. İki parmağınızla yukarı veya aşağı kaydırın.

Sola ve sağa tıklama

3. Farenin sol düğmesini tıklatmak için basın.*
4. Farenin sağ düğmesini tıklatmak için basın.*

*Tıklama yapmadığınız dokunmatik yüzeye de hafifçe vurabilirsiniz. Dokunmatik yüzeye dokunma devre dışı bırakmak için Fn-tuşuna artı sol fare düzmesine basın. Dokunmatik yüzeye dokunma ileşlevini yeniden etkinleştirmek için Fn-tuşuna artı sol fare düzmesine tekrar basın.

İyi bir deneyim için ipuçları!

Dokunmatik yüzey deneyiminizi ayarlamak için www.logitech.com/support/K400 adresinden yazılım indirip yükleyin. Yazılım, ekran işaretçisinin hızını değiştirmenize, kaydırma işlemini ayarlanırmaya ve dokunmatik yüzeye hafifçe vurma ileşlevi devre dışı bırakmanıza olanak sağlar.

العربية

حركات لوحة اللمس

التجهيز والتثبيت

1. قم بتنبيهه أصبع واحد وتحريكه في أي مكان على لوحة الماوس لتحريره من الشاشة.
2. قم بالتمرير بأسهمين، للأعلى أو للأدنى.

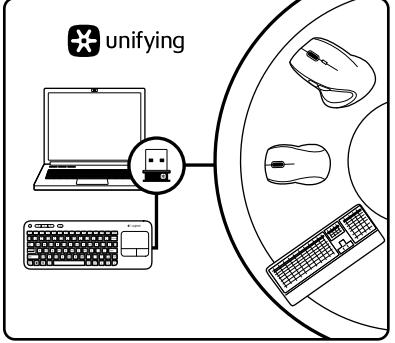
النقر على الماوس والميمنى

4. اضغط للحصول على النقر بزر الماوس اليميني.*
5. يمكنك أيضًا النقر فوق سطح لوحة الماوس لإجراء نقرة، لتعطيل النقر فوق لوحة الماوس،

لتعطيل النقر فوق لوحة الماوس، اضغط على مفتاح Fn بالإضافة إلى زر الماوس اليميني. لإعادة تعيين النقر فوق لوحة الماوس، اضغط على مفتاح Fn بالإضافة إلى زر الماوس اليميني مرة أخرى.

نصائح للحصول على تجربة مخصصة!

لضبط تجربة لوحة الماوس، قم بتنزيل البرنامج من الموقع www.logitech.com/support/ من الموقع/[K400](http://www.logitech.com/support/K400) وتنبيهه. يتيح لك البرنامج تعديل سرعة الماوس المعروض على الشاشة وضبط التثبيت وتعطيل النقر فوق لوحة الماوس.



English

The Logitech® Unifying receiver

Plug it. Forget it. Add to it.

Your new Logitech product ships with a Logitech Unifying receiver. Did you know you can add a compatible Logitech wireless device that uses the same receiver as your current Logitech Unifying product?

Are you Unifying-ready?

If you have a Logitech wireless device that's Unifying-ready, you can pair it with additional Unifying devices. Just look for the orange Unifying logo on the new device or its packaging. Build your ideal combo. Add something. Replace something. It's easy, and you'll use only one USB port for up to six devices.

Getting started is easy

If you're ready to pair your device(s) via Unifying, here's what you need to do:

1. Make sure your Unifying receiver is plugged in.
2. If you haven't already, download the Logitech® Unifying software from www.logitech.com/unifying.
3. Start the Unifying software* and follow the onscreen instructions to pair the new wireless device with your existing Unifying receiver.
- *Go to Start / All Programs / Logitech / Unifying / Logitech Unifying Software

Français

Récepteur Logitech® Unifying

Branchez-le. Oubliez-le. Ajoutez des dispositifs.

Votre nouveau produit Logitech est livré avec un récepteur Logitech Unifying. Savez-vous qu'il est possible d'ajouter un dispositif Logitech sans fil compatible utilisant le même récepteur que votre produit Logitech Unifying actuel?

Etes-vous compatible Unifying?

Si vous possédez un dispositif Logitech sans fil compatible Unifying, vous pouvez l'associer à d'autres dispositifs Unifying. Recherchez la présence du logo orange Unifying sur le nouveau dispositif ou son emballage. Créez votre combinaison parfaite. Ajoutez un dispositif. Remplacez-en un. C'est très simple, et vous pouvez utiliser un seul port USB pour six dispositifs.

L'installation est très facile.

Si vous êtes prêt à associer vos dispositifs en utilisant le récepteur Unifying, voici comment procéder:

1. Vérifiez que le récepteur Unifying est correctement branché.
2. Si ce n'est déjà fait, téléchargez le logiciel Logitech® Unifying à partir du site www.logitech.com/unifying.
3. Lancez le logiciel Unifying* et suivez les instructions à l'écran pour coupler le nouveau dispositif sans fil au récepteur Unifying existant.

*Cliquez sur Démarrer / Tous les programmes / Logitech / Unifying / Logiciel Logitech Unifying

Nederlands

De Logitech® Unifying-ontvanger

Aansluiten. Vergeten. Toevoegen.

Uw nieuwe Logitech-product wordt geleverd met een Logitech Unifying-ontvanger. Wist u dat u een compatibel draadloos Logitech-apparaat kunt toevoegen dat dezelfde ontvanger gebruikt als uw huidige Logitech apparaat?

Bent u klaar voor Unifying?

Als u een draadloos Logitech-apparaat hebt dat klaar is voor Unifying, kunt u het koppelen aan andere Unifying-apparaten. Kijk of u het oranje Unifying-logo ziet op het nieuwe apparaat of de verpakking. Stel uw ideale combinatie samen. Voeg er iets aan toe. Vervang weer eens iets. Het is heel eenvoudig en u hebt maar één USB-poort nodig voor zes apparaten.

U kunt binnen een handomdraai aan de slag

Als u er klaar voor bent om uw apparaat of apparaten via Unifying te koppelen, gaat u als volgt te werk:

1. Zorg dat uw Unifying-ontvanger is aangesloten.
2. Download de Logitech® Unifying-software van www.logitech.com/unifying.
3. Start de Unifying-software* en volg de instructies op het scherm om het nieuwe draadloze apparaat te koppelen aan uw bestaande Unifying-ontvanger.

*Ga naar Start/Alle programma's/Logitech/Unifying/ Logitech Unifying-software

Ελληνικά

Ο δέκτης Unifying της Logitech®

Συνδέστε το. Ξεχάστε το. Εμπλουτίστε το.

Το νέο σας προϊόν Logitech συνδέεται έναν δέκτη Unifying της Logitech. Γνωρίζετε ότι μπορείτε να προσθέσετε μια συμβατή ασύρματη συσκευή Logitech που χρησιμοποιεί τον ίδιο δέκτη με το παρόν προϊόν Unifying της Logitech.

Διαθέτετε υποστήριξη Unifying;

Εάν έχετε μια ασύρματη συσκευή της Logitech που υποστηρίζει Unifying, μπορείτε να την αντιστοιχίσετε με πρόσθετες συσκευές Unifying.

Απλά αναζητήστε το πορτοκαλί λογότυπο Unifying πάνω στη νέα συσκευή στη συσκευασία της. Δημιουργήστε το ιδιαίτερο συνδύασμα. Προσθέστε κάτι. Αντικαταστήστε κάτι. Είναι εύκολο και θα χρησιμοποιήσετε μία μόνο θύρα USB για όλη συσκευές.

Η διαδικασία είναι πολύ εύκολη

Εάν είστε έτοιμοι να αντιστοιχίσετε τις συσκευές σας μέσω Unifying, θα πρέπει να κάνετε τα εξής:

1. Βεβαιωθείτε ότι ο δέκτης Unifying είναι συνδέσμενός.
2. Εάν δεν το έχετε κάνει ήδη, κάντε λήψη του λογισμικού Logitech® Unifying από τη διεύθυνση www.logitech.com/unifying.
3. Ξεκίνηστε το λογισμικό Unifying* και ακολουθήστε τις οδηγίες που εμφανίζονται στην οθόνη για να αντιστοιχίσετε τη νέα ασύρματη συσκευή με τον υπάρχοντα δέκτη Unifying.

*Μεταβείτε στο μενού Έναρξη / Ολά τα προγράμματα / Logitech / Unifying / Λογισμικό Unifying της Logitech

Türkçe

Logitech® Unifying alıcı

Takın. Unutun. Ekleyn.

Yeni Logitech-product wordt geleverd met een Logitech Unifying-ontvanger. Wist u dat u een compatibel draadloos Logitech-apparaat kunt toevoegen dat dezelfde ontvanger gebruikt als uw huidige Logitech apparaat?

Unifying kullanmaya hazır mısınız?

Unifying kullanımlına hazır bir Logitech kablosuz aygıınız varsa başka Unifying aygıtlarıyla eşleştirilebilirsiniz. Yeni aygitin veya ambalajının üzerinde turuncu Unifying logosu olup olmadığı bakın. İdeal kombinasyonunu oluşturun. Bir şeyler ekleyin. Bir şeyleri değiştirin. Çok kolay. Altı aygıt kadar tek bir USB bağlantı noktası kullanabilirsiniz.

Başlamak kolay

Aygıtlarınıza Unifying ile eşleştirmeye hazırlızsanız işte yapmanız gerekenler:

1. Unifying alıcınızın fiş takılı olduğundan emin olun.
2. Henüz yapmadıysanız www.logitech.com/unifying adresinden Logitech® Unifying yazılımını indirin.
3. Start the Unifying-software* en volg de instructies op het scherm om het nieuwe draadloze apparaat te koppelen aan uw bestaande Unifying-ontvanger.

*Ga naar Start/Alle programma's/Logitech/Unifying/ Logitech Unifying-software

English

Help with setup

- Is the keyboard powered on?
- Power Off and power On the keyboard.
- Is the Unifying receiver securely plugged into a computer USB port? Try changing USB ports.
- If the Unifying receiver is plugged into a USB hub, try plugging it directly into a USB port on your computer.
- Did you pull the battery tab? Check the orientation of the batteries inside the keyboard, or replace the two AA alkaline batteries.
- Remove metallic objects between the keyboard and its Unifying receiver.
- Try moving the Unifying receiver to a USB port closer to the keyboard.
- Try reconnecting the keyboard and Unifying receiver using the Logitech Unifying software (Refer to the Unifying section in this guide.)

Français

Aide pour la configuration

- Le clavier est-il sous tension?
- Eteignez le clavier et rallumez-le.
- Le récepteur Unifying est-il correctement branché sur un port USB de l'ordinateur? Réessayez en changeant de port USB.
- Si le récepteur Unifying est branché sur un hub USB, branchez-le directement sur un port USB de l'ordinateur.
- Avez-vous retiré la languette de protection? Vérifiez l'orientation des piles dans le clavier ou remplacez les deux piles alcalines AA.
- Retirez tout objet métallique se trouvant entre le clavier et le récepteur Unifying.
- Essayez de brancher le récepteur Unifying dans un port USB plus proche du clavier.
- Essayez de reconnecter le clavier et le récepteur Unifying à l'aide du logiciel Logitech Unifying (reportez-vous à la section Unifying de ce guide).

Nederlands

Hulp bij de set-up

- Staat het toetsenbord aan?
- Aan- en uitzetten op het toetsenbord.
- Is de Unifying-ontvanger goed aangesloten op de USB-poort van uw computer? Probeer een andere USB-poort.
- Als de Unifying-ontvanger op een USB-hub is aangesloten, probeer deze dan rechtstreeks op de USB-poort van uw computer aan te sluiten.
- Hebt u het lipje van de batterij losgetrokken? Controleer of de batterijen correct in het toetsenbord geplaatst zijn of vervang de twee AA-alkalinebatterijen.
- Verwijder metalen objecten tussen het toetsenbord en de Unifying-ontvanger.
- Verplaats de Unifying-ontvanger naar een USB-poort die zich dichter bij het toetsenbord bevindt.
- Verbind het toetsenbord en de Unifying-ontvanger opnieuw met behulp van de Logitech Unifying-software (zie de sectie Unifying in deze handleiding).

Ελληνικά

Βοήθεια με την εγκατάσταση

- Είστε ενεργοποιήσατε και την πληκτρολόγιο;
- Απενεργοποιήστε και ενεργοποιήστε ξανά το πληκτρολόγιο.
- Είστε συνδέσει αστάτο το δέκτη Unifying σε μια θύρα USB του υπολογιστή; Δοκιμάστε να αλλάξετε θύρα USB.
- Εάν ο νανοδέκτης είναι συνδέσμενος σε έναν διανομέα USB, δοκιμάστε να τον συνδέσετε απευθείας σε μια άλλη θύρα USB στον υπολογιστή σας.
- Είστε τραβήξατε την ασφάλεια της μπαταρίας; Ελέγχετε τον προσανατολισμό των μπαταριών στο εσωτερικό του πληκτρολογίου ή αντικαταστήστε τις δύο αλκαλικές μπαταρίες με γεγέθους AA.
- Αποκαρύνετε τα τυχόν μεταλλικά αντικείμενα ανάμεσα στο πληκτρολόγιο και το δέκτη Unifying.
- Προσπαθήστε να μετακινήσετε το δέκτη Unifying σε μια άλλη θύρα USB ποι κοντά στο πληκτρολόγιο.
- Δοκιμάστε να επανασυνδέσετε το πληκτρολόγιο και το δέκτη Unifying χρησιμοποιώντας το λογισμικό Logitech Unifying (ανταρέστε στην ενότητα Unifying του οδηγού αυτού).

Türkçe

Kurulum yardımcı

- Klavye açık mı?
- Klavyeyi Kapatma.
- Unifying alıcı bağlantı noktasına tam olarak takılı mı? Bağlılık noktalardan değiştirmeyi deneyin.
- Unifying alıcı USB bağlantı noktasını doğrudan bilgisayarınızda bir USB bağlantı noktasına takmayı deneyin.
- Pil bölmesini çektiğiniz mi? Klavyenin içindeki pilerin yönünün doğru olup olmadığını kontrol edin veya iki AA alkalik pilin değiştirin.
- Klavyeyi Unifying alıcıyı yakından bir USB bağlantı noktasına taşıyın.
- Logitech Unifying yazılımını kulanarak klavyeyi ve Unifying alıcıyı yeniden bağlamayı deneyin (Bu kılavuzdaki Unifying bölümune bakın.)

العربية

- هل لوحة المفاتيح قيد التشغيل؟
- تشغيل لوحة المفاتيح وقف تشغيلها.
- هل تم توصيل مستقبل Unifying بإحكام في منفذ USB؟
- هل جهاز الكمبيوتر؟ حاول تغيير منفذ USB.
- في حالة توصيل مستقبل Unifying بلوحة وصل حاول توصيله بميكانور ميغرا.
- هل قمت بسحب لسان البطارية؟ تحقق من اتجاه البطاريات الموجودة داخل لوحة المفاتيح، أو استبدل البطاريات القديمة.
- AA محم.
- مجازة العناصر المعنية الموجودة بين لوحة المفاتيح ومستقبل Unifying.
- حاول نقل مستقبل Unifying إلى منفذ USB قريب من لوحة المفاتيح.
- حاول إعادة توصيل لوحة المفاتيح ومستقبل Unifying من Logitech (رجاءً قم باستخدام برنامج Unifying بهذا الدليل).



www.logitech.com

M/N:C-U0007
Rating: 5V --, 100mA
Approval No.: ETA-418/2010/WRLO
CMIT ID: 2010DJO355
14418/POSTEL/2010
2100
FCC ID: JN2CU0007
IC: 4418A-CU0007
MADE IN CHINA
CCAIOLP0020T1

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620-003214-006

What do you think?

Qu'en pensez-vous?

Wat vindt u?

Ποια είναι η άποψή σας;

Ne düşünüyorsunuz?

ما رأيك؟

Please take a minute to tell us. Thank you for purchasing our product.

Prenez quelques minutes pour nous faire part de vos commentaires.

Vous venez d'acheter ce produit et nous vous en félicitons.

Neem even de tijd om ons uw mening te geven.

Hartelijk dank voor de aanschaf van ons product.

Θα θέλαμε να την ακούσουμε. Σας ευχαριστούμε για την αγορά σας.

Lütfen birkaç dakikanızı ayırarak düşüncelerin

Dell C7520QT

User's Guide

Model: C7520QT
Regulatory model: C7520QTt



 **NOTE:** A NOTE indicates important information that helps you make better use of your display.

 **CAUTION:** A CAUTION indicates potential damage to hardware or loss of data if instructions are not followed.

 **WARNING:** A WARNING indicates a potential for property damage, personal injury, or death.

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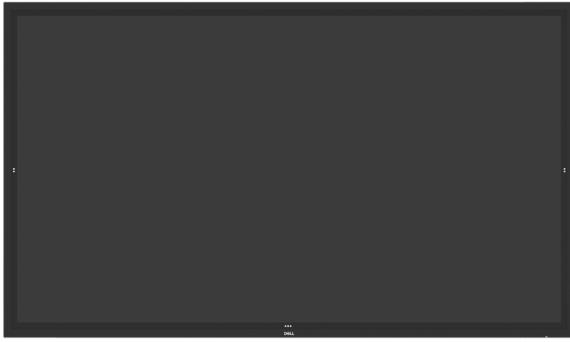


About Your Display

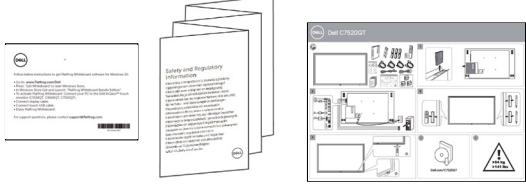
Package Contents

Your display ships with the components shown below. Make sure that you have received all the components and [contact Dell](#) if something is missing.

 **NOTE:** Some items may be optional and may not ship with your display. Some features may not be available in certain countries.

	Display
	Remote Control & Batteries (AAA x 2)
	Stylus x 2



	(Remote control & Stylus holder) x 3
	Wire Saddle x 3
	Power cable (varies by country)
	Power cable for connecting Optiplex system to display (see Optiplex (Optional))
	USB 3.0 upstream cable (enables the USB ports on the display)
	DP cable (DP to DP)
	VGA cable
	HDMI cable
	<ul style="list-style-type: none"> Flatfrog Whiteboard Software download instruction Safety, Environmental and Regulatory Information Quick Setup Guide



Product Features

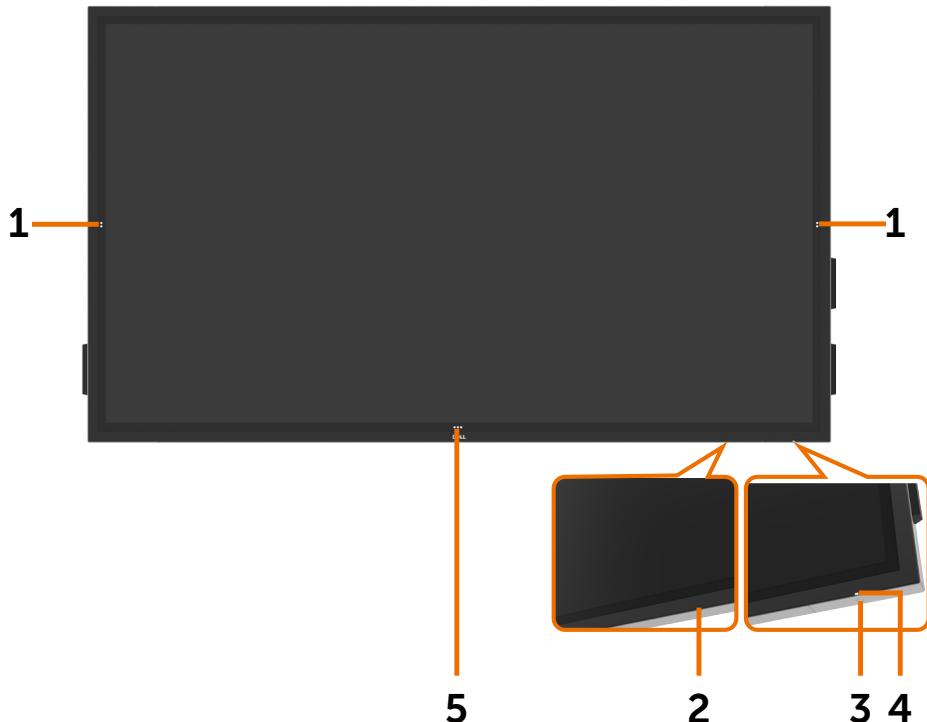
The **Dell C7520QT** display has an active matrix, thin film transistor (TFT), liquid crystal display (LCD), and LED backlight. The display features include:

- 189.273 cm (74.52-inch) active area display (Measured diagonally) 3840 x 2160 (16:9 aspect ratio) resolution, plus full-screen support for lower resolutions.
- Video Electronics Standards Association (VESA™) 400 x 400 mm mounting holes.
- Plug and play capability if supported by your system.
- On-Screen Display (OSD) adjustments for ease of set-up and screen optimization.
- Security lock slot.
- Supports Asset Management Capability.
- Arsenic-Free glass and Mercury-Free for Panel only.
- 0.3 W standby power when in the sleep mode.
- Easily setup with Dell Optiplex Micro PC (Micro Form Factor).
- Up to 20 points and 4 pens InGlass™ Touch technology.
- Optimize eye comfort with a flicker-free screen.
- The possible long-term effects of blue light emission from the display may cause damage to the eyes, including eye fatigue or digital eye strain. ComfortView feature is designed to reduce the amount of blue light emitted from the display to optimize eye comfort.



Identifying Parts and Controls

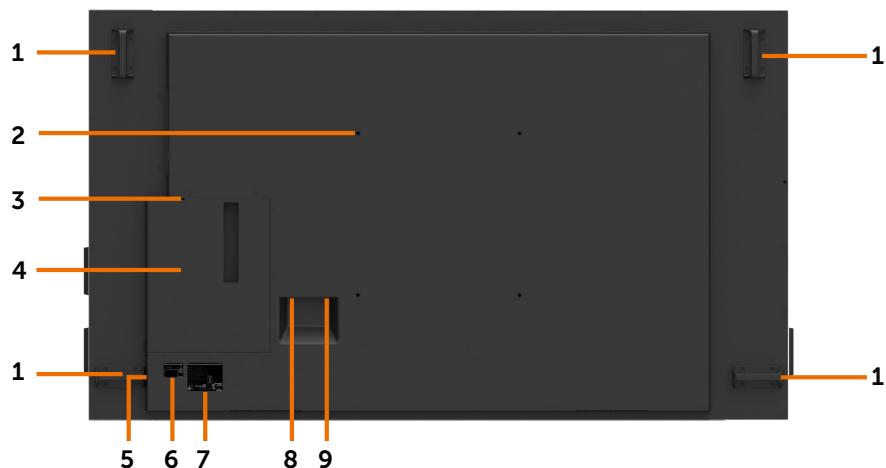
Front view



Label	Description
1	Screen drop down touch key
2	IR Lens
3	Power on/off button
4	Power LED indicator
5	OSD Launcher touch key (For more information, see Operating the Display)



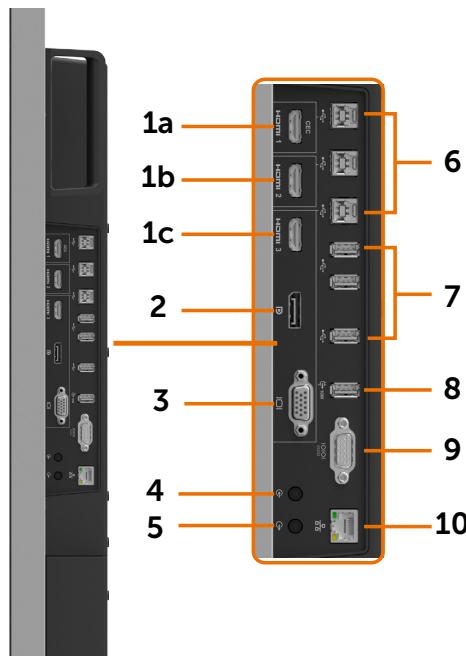
Back View



Label	Description	Use
1	Handle x 4	Use to move the display.
2	VESA mounting holes (400 x 400 mm)	To mount the display.
3	Security lock slot	Secures Optiplex with security cable lock (sold separately).
4	Optiplex holder	Use to hold a Micro Form Factor Optiplex PC.
5	Serial number, Service Tag label, and Website	Refer to this label if you need to contact Dell for technical support.
6	Barcode, serial number, and Service Tag label	
7	Regulatory label	List of approved regulatory labels.
8	AC to optiplex (optional)	AC power to optiplex power adapter.
9	AC power connector	To connect the display power cable.



Side View

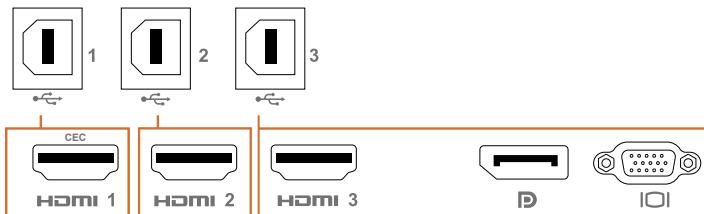


Label	Description	Use
1a	HDMI 1 connector	
1b	HDMI 2 connector	Connect your computer with HDMI cable.
1c	HDMI 3 connector	
2	DP connector	Connect your computer with DP cable.
3	VGA connector	Connect your computer with VGA cable.
4	Audio line-in port	Analog audio (two channel) input.
5	Audio line-out port	Connect to external audio peripherals. Only supports 2-channel audio. NOTE: The audio line-out port does not support headphones.
6	USB 3.0 upstream ports (3)	Connect the USB cable that comes with your display to the computer. Once this cable is connected, you can use the USB downstream connectors on the display and the touch screen function on the display.



7	USB 3.0 downstream ports (3)	Connect your USB device. You can only use this connector after you have connected the USB cable to the computer and USB upstream connector on the display.
8	USB charging port	USB 3.0 with 10 W with BC1.2 charging capability at 2A (max).
9	RS232 connector	Remote management and control of display via RS232.
10	RJ-45 connector	Remote Network Management and control of display via RJ-45.

Input sources and USB pairing



Input sources	USB upstream
HDMI 1 CEC	USB 1
HDMI 2	USB 2
HDMI 3	USB 3
DP	
VGA	

Bottom View



Label	Description
1, 2	Speakers
3	Power on/off button



Display Specifications

Screen type	Active matrix - TFT LCD
Panel Type	In-plane switching Technology
Aspect ratio	16:9
Viewable image dimensions	
Diagonal	189.273 cm (74.52 inches)
Active Area	
Horizontal	1649.664 mm (64.95 inches)
Vertical	927.936 mm (36.53 inches)
Area	1530323.4 mm ² (2372 inches ²)
Pixel pitch	0.429 mm x 0.429 mm
Pixel per inch (PPI)	59
Viewing angle	
Horizontal	178° (typical)
Vertical	178° (typical)
Panel brightness	350 cd/m ² (typical)
Contrast ratio	1200 to 1 (typical)
Display screen coating	9H, Anti-Smudge, Anti-Glare
Response Time	8 ms typical (G to G), 12 ms max. (G to G)
Color depth	1.07 Billion colors
Color gamut	NTSC (72%)
Connectivity	<ul style="list-style-type: none">• 1 x DP 1.2• 1 x VGA• 3 x HDMI 2.0• 4 x USB 3.0 downstream port (1 x USB BC1.2 charging capability at 2A (max))• 3 x USB 3.0 upstream port• 1 x Analog 2.0 audio line out (3.5 mm jack)• 1 x Analog 2.0 audio line in (3.5 mm jack)• 1 x RJ-45• 1 x RS232
Border width (edge of display to active area)	42.75 mm (Top) 42.69 mm (Left/Right) 46.75 mm (Bottom)



Touch

Type	InGlass Touch Technology™
Input Method	Bare finger and stylus
Interface	USB HID Compliant
Touch point	Up to 20 points touch Up to 4 pens

NOTE: Touch Pen and Eraser differentiation ready (functionality subject to application).

Support OS

OS	Version	Touch	Pen	Eraser
Windows	7 Pro and Ultimate	20	4	1
	8, 8.1	20	4	1
	10	20	4	1
Chorme OS	Linux kernel version 3.15 (3.10) or later ¹	20	4 (0)	1 (0)
Android	4.4 (KitKat) with Linux kernel 3.15 (3.10) or later ¹	20	4 (0)	1 (0)
Other Linux based OS	Linux kernel 3.15 or later	20	4	1
macOS	10.10, 10.11	1 (mouse ²)		No

¹ Functionality of Linux kernel has been verified on Ubuntu 14.04 and Debian 8. Functionality of Chrome OS and Android with Linux kernel 3.15 needs confirmation.

² Mouse emulation in landscape mode. Full multi-touch requires additional drivers on the host system.

Touch sensor input accuracy

		Typ ¹	Max ²	Unit
Touch sensor input accuracy	Center area ³	1.0	1.5	mm
	Edge area ⁴	1.2	2.0	mm

¹ Average accuracy at the specified input area.

² 95-percentile accuracy of specified input area.

³ >20 mm from active touch area edge

⁴ >20 mm from active touch area edge

Note that touch sensor input accuracy is defined relative to the active touch area as defined in the reference drawing (listed in 8.1). The overall system accuracy, of touch co-ordinates relative to display co-ordinates, is directly affected by integration assembly tolerances.



Resolution Specifications

Horizontal scan range	30 kHz to 140 kHz (DP/HDMI)
Vertical scan range	24 Hz to 75 Hz (DP/HDMI)
Maximum preset resolution	3840 x 2160 at 60 Hz
Video display capabilities (DP & HDMI playback)	480p, 576p, 720p, 1080i, 1080p, 2160p

NOTE: VGA input resolution supported is 1920 x 1080 only.

Preset Display Modes

Display Mode	Horizontal Frequency (kHz)	Vertical Frequency (Hz)	Pixel Clock (MHz)	Sync Polarity (Horizontal/Vertical)
720 x 400	31.5	70.0	28.3	-/+
640 x 480	31.5	60.0	25.2	-/-
640 x 480	37.5	75.0	31.5	-/-
800 x 600	37.9	60.0	40.0	+/+
800 x 600	46.9	75.0	49.5	+/+
1024 x 768	48.4	60.0	65.0	-/-
1024 x 768	60.0	75.0	78.8	+/-
1152 x 864	67.5	75.0	108.0	+/-
1280 x 800	49.3	60.0	71.0	+/-
1280 x 1024	64.0	60.0	108.0	+/-
1280 x 1024	80.0	75.0	135.0	+/-
1600 x 1200	75.0	60.0	162.0	-/+
1920 x 1080	67.5	60.0	193.5	+/-
2048 x 1152	71.6	60.0	197.0	+/-
2560 x 1440	88.8	60.0	241.5	+/-
3840 x 2160	65.68	30.0	262.75	+/-
3840 x 2160	133.313	60.0	533.25	+/-



Electrical Specifications

Video input signals	<ul style="list-style-type: none">Digital video signal for each differential linePer differential line at 100 ohm impedanceDP/HDMI/VGA signal input support
Input voltage/ frequency/current	100-240 VAC / 50 or 60 Hz ± 3 Hz / 5.5 A (maximum)
Output voltage/ frequency/current	100-240 VAC / 50 or 60 Hz ± 3 Hz / 2 A (maximum)
Inrush current	120 V: 42 A (Max.) at 0 °C (cold start) 240 V: 80 A (Max.) at 0 °C (cold start)

Physical Characteristics

Connector type	<ul style="list-style-type: none">DP connectorVGA connectorHDMI connectorAudio line-outAudio line-inUSB 3.0 connectorUSB charging port- supplying power of up to 5 V (max 2A) for connected devicesRJ-45 connectorRS232 connector
Signal cable type (in-box)	DP, 3 m cable HDMI, 3 m cable VGA, 3 m cable USB 3.0, 3 m cable Optiplex power cable, 1 m
Dimensions	
Height	1017.44 mm (40.06 inches)
Width	1735.02 mm (68.31 inches)
Depth	79.1 mm (3.11 inches)
Weight	
Weight with packaging	76 kg (167.55 lb)
Weight without packaging	64 kg (141.10 lb)



Environmental Characteristics

Compliant Standards	
ENERGY STAR certified Monitor	yes
EPEAT	EPEAT registered where applicable. EPEAT registration varies by country. See www.epeat.net for registration status by country.
RoHS Compliant	yes
Temperature	
Operating	0 °C to 40 °C (32 °F to 104 °F)
Non-operating	-20 °C to 60 °C (-4 °F to 140 °F)
Humidity	
Operating	10% to 80% (non-condensing)
Non-operating	5% to 90% (non-condensing)
Altitude	
Operating	5,000 m (16,404 ft) (maximum)
Non-operating	12,192 m (40,000 ft) (maximum)
Thermal dissipation	921.89 BTU/hour (maximum) 546.30 BTU/hour (typical)

Power Management Modes

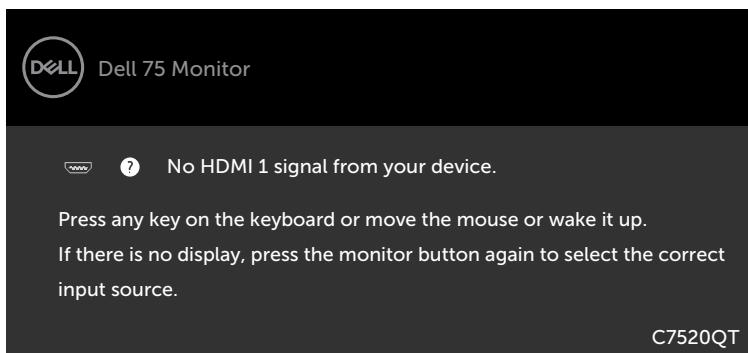
If you have VESA's DPM-compliant video card or software installed in your PC, the display can automatically reduce its power consumption when not in use. This is referred to as power save mode*. If the computer detects input from the keyboard, mouse, or other input devices, the display automatically resumes functioning. The following table shows the power consumption and signaling of this automatic power saving feature.

VESA Modes	Horizontal Sync	Vertical Sync	Video	Power Indicator	Power Consumption
Normal operation	Active	Active	Active	White	270 W (maximum)** 160 W (typical)
Active-off mode	Inactive	Inactive	Off	White (Glowing)	Less than 0.3 W
Switch off	-	-	-	Off	Less than 0.3 W

Power Consumption P _{on}	114.4 W
Total Energy Consumption (TEC)	Not Applicable



The OSD operates only in the normal operation mode. If you press any button in the active-off mode, the following message is displayed:



*Zero power consumption in OFF mode can only be achieved by disconnecting the AC main cable from the display.

**Maximum power consumption with maximum luminance, and USB active.

This document is informational only and reflects laboratory performance. Your product may perform differently, depending on the software, components and peripherals you ordered and shall have no obligation to update such information. Accordingly, the customer should not rely upon this information in making decisions about electrical tolerances or otherwise. No warranty as to accuracy or completeness is expressed or implied.

Activate the computer and the display to gain access to the OSD.



This product qualifies for ENERGY STAR in the factory default settings which can be restored by "Factory Reset" function in the OSD menu. Changing the factory default settings or enabling other features may increase power consumption that could exceed the ENERGY STAR specified limit.



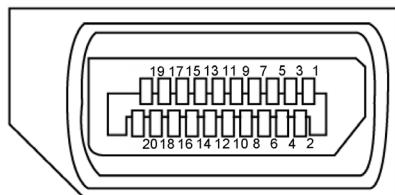
P_{on}: Power consumption of On Mode as defined in Energy Star 8.0 version.

TEC: Total energy consumption in kWh as defined in Energy Star 8.0 version.



Pin Assignments

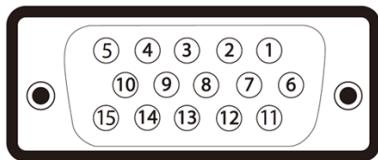
DP connector



Pin number	20-pin side of the connected signal cable
1	ML3(n)
2	GND
3	ML3(p)
4	ML2(n)
5	GND
6	ML2(p)
7	ML1(u)
8	GND
9	ML1(p)
10	ML0(n)
11	GND
12	ML0(p)
13	CONFIG1/(GND)
14	CONFIG2/(GND)
15	AUX CH (p)
16	DP_Cable Detect
17	AUX CH (n)
18	Hot Plug Detect
19	GND
20	+3.3V DP_PWR



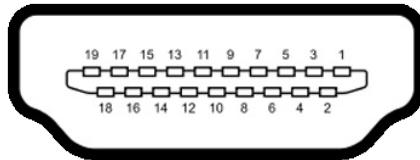
VGA connector



Pin number	15-pin side of the connected signal cable
1	Video-Red
2	Video-Green
3	Video-Blue
4	NC
5	Self-test
6	GND-R
7	GND-G
8	GND-B
9	Computer 5 V / 3.3 V
10	GND-sync
11	GND
12	DDC data
13	H-sync
14	V-sync
15	DDC clock



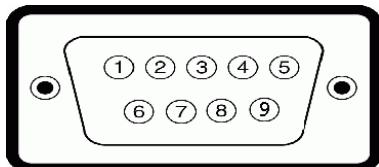
HDMI connector



Pin number	19-pin side of the connected signal cable
1	TMDS DATA 2+
2	TMDS DATA 2 SHIELD
3	TMDS DATA 2-
4	TMDS DATA 1+
5	TMDS DATA 1 SHIELD
6	TMDS DATA 1-
7	TMDS DATA 0+
8	TMDS DATA 0 SHIELD
9	TMDS DATA 0-
10	TMDS CLOCK+
11	TMDS CLOCK SHIELD
12	TMDS CLOCK-
13	CEC
14	Reserved (N.C. on device)
15	DDC CLOCK (SCL)
16	DDC DATA (SDA)
17	DDC/CEC Ground
18	+5 V POWER
19	HOT PLUG DETECT



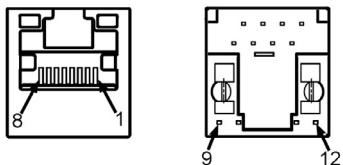
RS232 connector



Pin number	9-pin side of the connected signal cable
1	-
2	RX
3	TX
4	-
5	GND
6	-
7	Not Used
8	Not Used
9	-



RJ-45 connector



Pin number	12-pin side of the connected signal cable
1	D+
2	RCT
3	D-
4	D+
5	RCT
6	D-
7	GND
8	GND
9	LED2_Y+
10	LED2_Y-
11	LED2_G+
12	LED2_G-



Universal Serial Bus (USB)

This section gives you information about the USB ports available on your display.

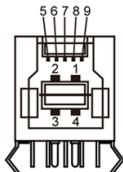
Your computer has the following USB ports:

- 3 USB 3.0 upstream
- 4 USB 3.0 downstream (1 USB charging port)

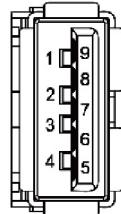
 **NOTE:** The display's USB ports work only when the display is on or in the power save mode. If you turn off the display and then turn it on, the attached peripherals may take a few seconds to resume normal functionality.

Transfer speed	Data rate	Power consumption
SuperSpeed	5 Gbps	4.5 W (Max., each port)
Hi-Speed	480 Mbps	4.5 W (Max., each port)
Full speed	12 Mbps	4.5 W (Max., each port)

USB 3.0 upstream port



USB 3.0 downstream port



Pin number	Signal name
1	VBUS
2	D-
3	D+
4	GND
5	StdB_SSTX-
6	StdB_SSTX+
7	GND_DRAIN
8	StdB_SSRX-
9	StdB_SSRX+
Shell	Shield

Pin number	Signal name
1	VBUS
2	D-
3	D+
4	GND
5	StdA_SSRX-
6	StdA_SSRX+
7	GND_DRAIN
8	StdA_SSTX-
9	StdA_SSTX+
Shell	Shield



Plug-and-Play

You can install the display in any Plug-and-Play-compatible system. The display automatically provides the computer system with its extended display identification data (EDID) using display data channel (DDC) protocols so the computer can configure itself and optimize the display settings. Most display installations are automatic; you can select different settings if desired. For more information about changing the display settings, see [Operating the Display](#).

LCD Display Quality and Pixel Policy

During the LCD display manufacturing process, it is not uncommon for one or more pixels to become fixed in an unchanging state which are hard to see and do not affect the display quality or usability. For more information on LCD Display Pixel Policy, see Dell support site at: <http://www.dell.com/support/monitors>.



Setting Up the Display

Connecting Your Display

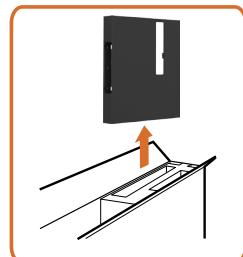
⚠️ WARNING: Before you begin any of the procedures in this section, follow the **Safety Instructions**.

To connect your display to the computer:

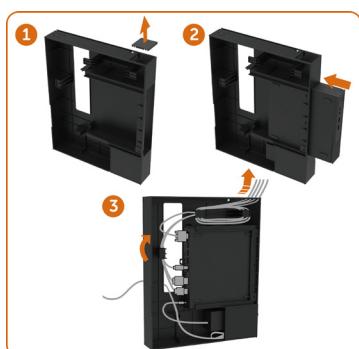
1. Turn off your computer.
2. Connect the HDMI/DP/VGA/USB cable from your display to the computer.
3. Switch on your display.
4. Select the correct input source at Display OSD Menu and turn on your computer.

Optiplex (Optional)

Attaching the Optiplex



- Open the carton, take out the Optiplex holder.



1. Remove cable cover.
2. Insert the Optiplex PC and power adapter into the respective compartments.
3. Plug in the cables and route the cables using the cable management hooks that is within the PC box holder.

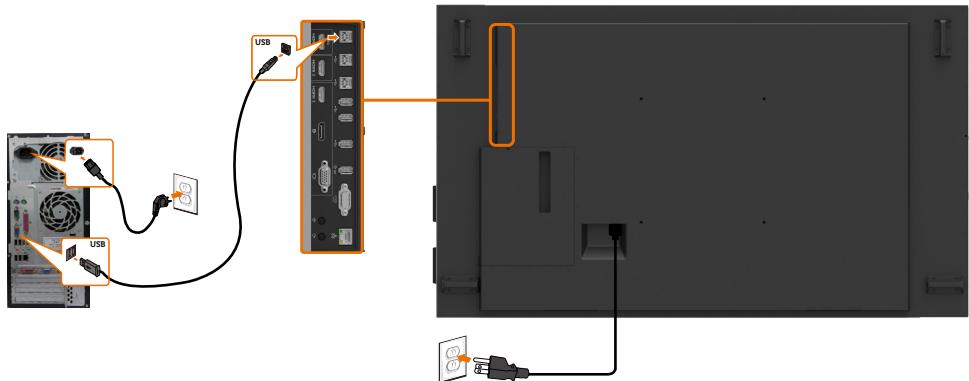




Slide Optiplex holder back into display.

External PC connection

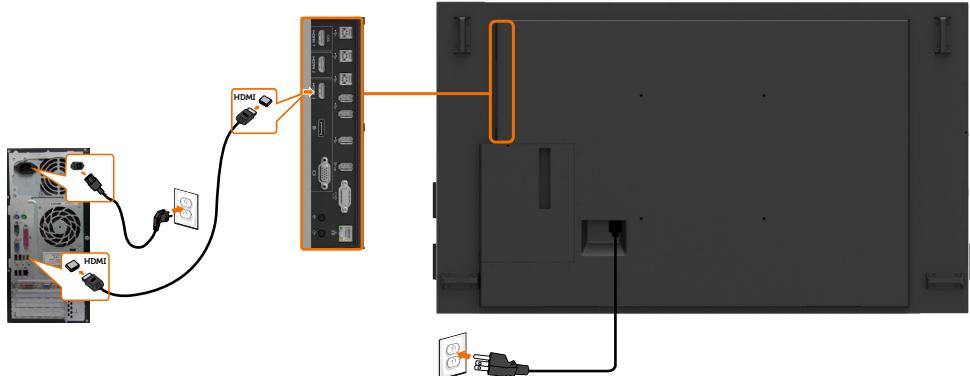
Connecting the USB cable



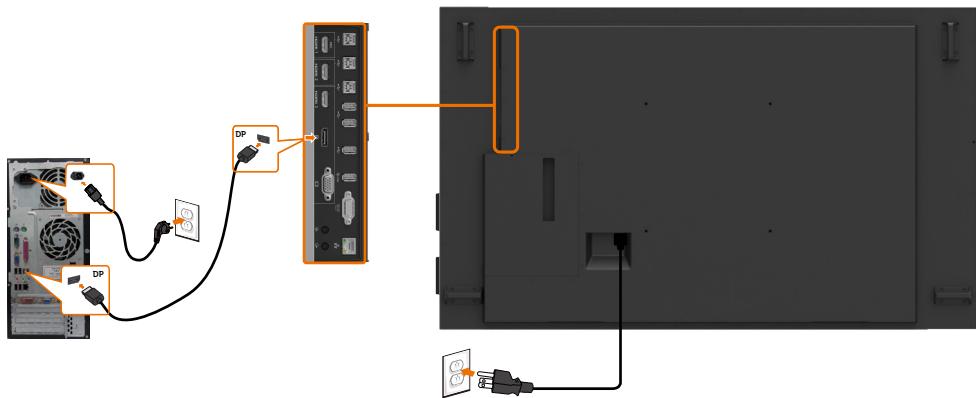
NOTE: Refer to section on [input source and USB pairing](#).



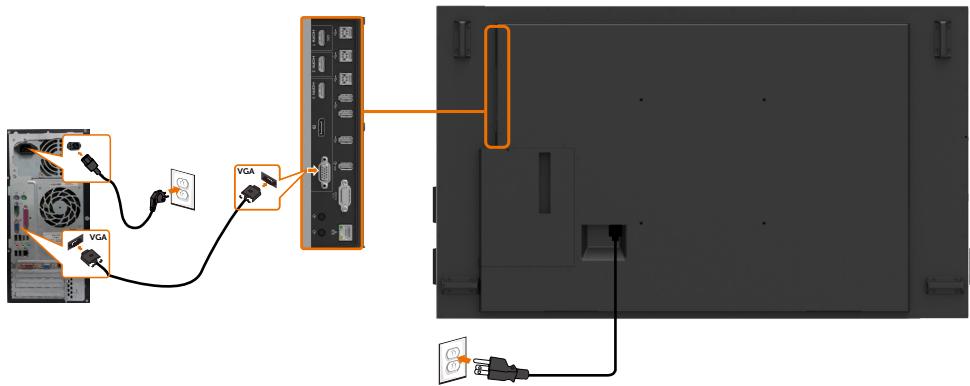
Connecting the HDMI cable



Connecting the DP cable

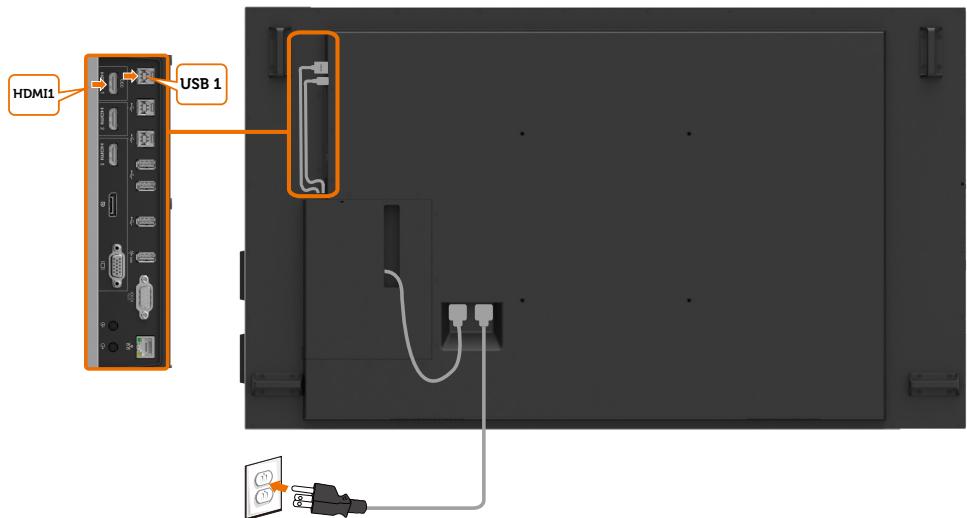


Connecting the VGA cable

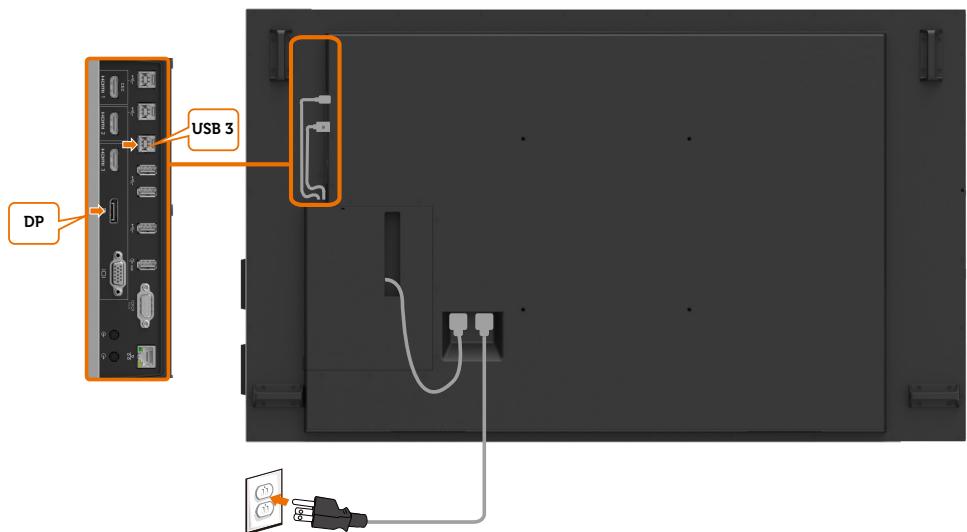


Connecting the Optiplex

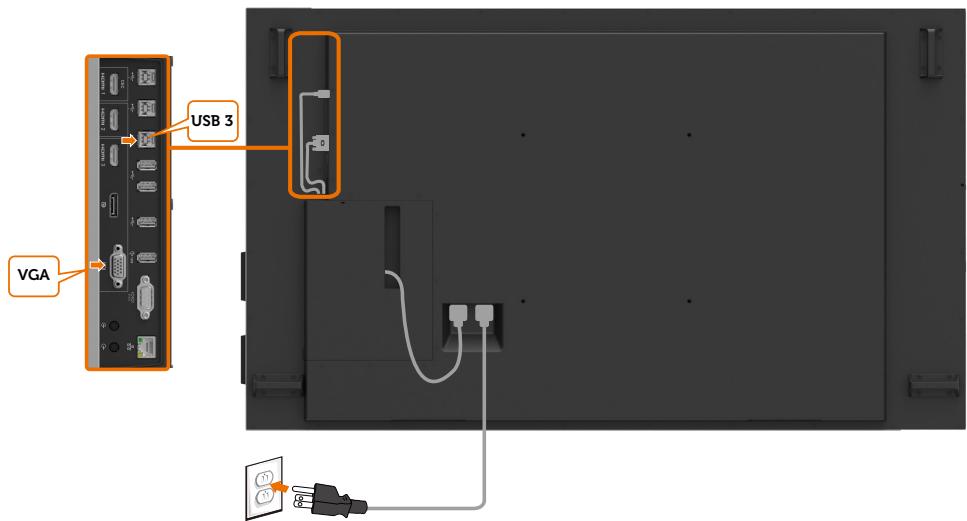
Connecting the HDMI cable



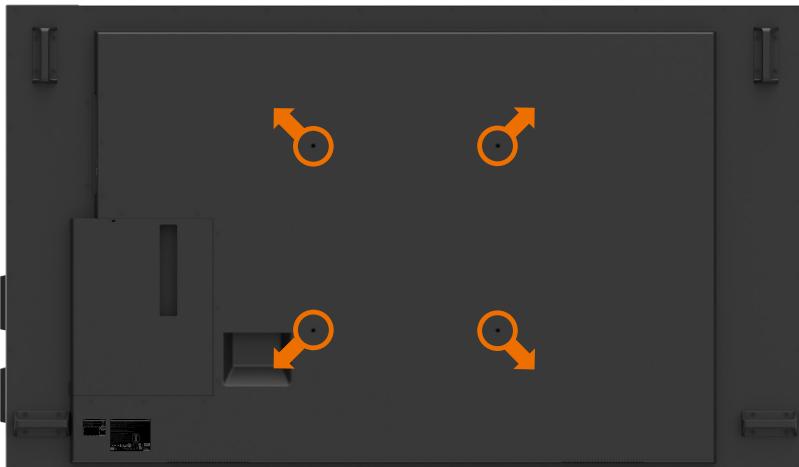
Connecting the DP cable



Connecting the VGA cable



Wall Mounting



(Screw dimension: M8 x 35 mm).

Refer to installation instruction that comes with the 3rd party wall mount that customer purchases. Vesa-compatible base mounting kit (400 x 400) mm.

1. Install Wall Plate to Wall.
2. Place the display panel on a soft cloth or cushion on a stable flat table.
3. Attach the mounting brackets from the wall mounting kit to the display.
4. Install Display to Wall Plate.
5. Ensure display is mounted vertically with no tilt forward or backward and a leveler is used to assist to mount the display.

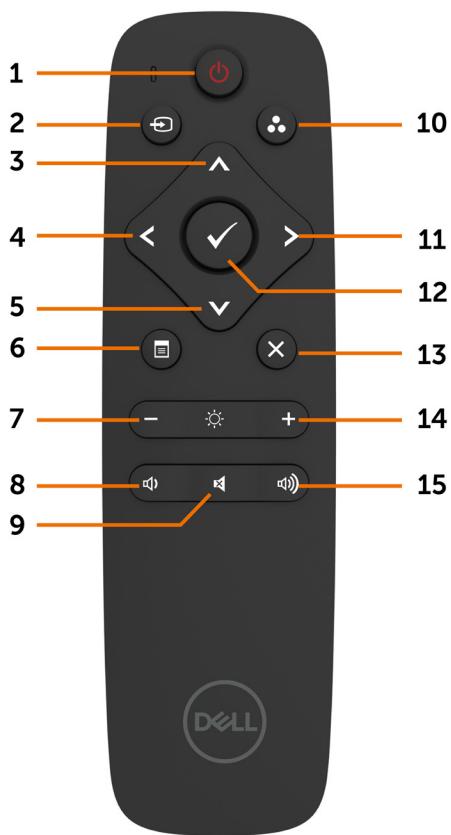
NOTE:

- Do not attempt to wall mount the Touch Display by yourself. it should be installed by qualified installers.
- Recommended Wall Mount for this Display is can be found in the Dell support website at dell.com/support.

NOTE: For use only with UL or CSA or GS-listed wall mount bracket with minimum weight/load bearing capacity of the product.



Remote Control



1. Power On/Off

Switch this display on or off.

2. Input Source

Select input source. Press **▲** or **▼** button to select from VGA or DP or HDMI 1 or HDMI 2 or HDMI 3.

Press **OK** button to confirm and exit.

3. Up

Press to move the selection up in OSD menu.

4. Left

Press to move the selection left in OSD menu.

5. Down

Press to move the selection down in OSD menu.

6. Menu

Press to turn on the OSD menu.

7. Brightness -

Press to decrease the Brightness.

8. Volume -

Press to decrease the Volume.

9. MUTE

Press to turn the mute function on/off.

10. Preset Modes

Display information about Preset Modes.

11. Right

Press to move the selection right in OSD menu.

12. OK

Confirm an entry or selection.

13. Exit

Press to exit the Menu.

14. Brightness +

Press to increase the Brightness.

15. Volume +

Press to increase the Volume.

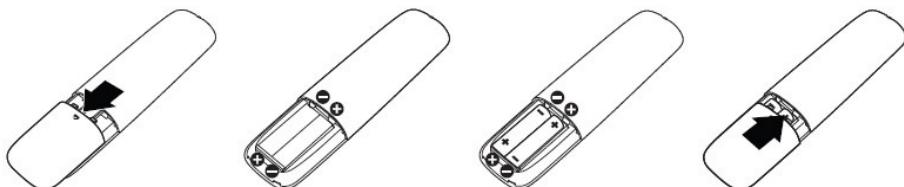


Inserting the batteries in the remote control

The remote control is powered by two 1.5V AAA batteries.

To install or replace batteries:

1. Press and then slide the cover to open it.
2. Align the batteries according to the (+) and (-) indications inside the battery compartment.
3. Replace the cover.



⚠ CAUTION: The incorrect use of batteries can result in leaks or bursting. Be sure to follow these instructions:

- Place "AAA" batteries matching the (+) and (-) signs on each battery to the (+) and (-) signs of the battery compartment.
- Do not mix battery types.
- Do not combine new batteries with used ones. It causes shorter life or leakage of batteries.
- Remove the dead batteries immediately to prevent them from liquid leaking in the battery compartment. Don't touch exposed battery acid, as it can damage your skin.

💡 NOTE: If you do not intend to use the remote control for a long period, remove the batteries.

Handling the remote control

- Do not subject to strong shock.
- Do not allow water or other liquids to splash on the remote control. If the remote control gets wet, wipe it dry immediately.
- Avoid exposure to heat and steam.
- Other than to install the batteries, do not open the remote control.

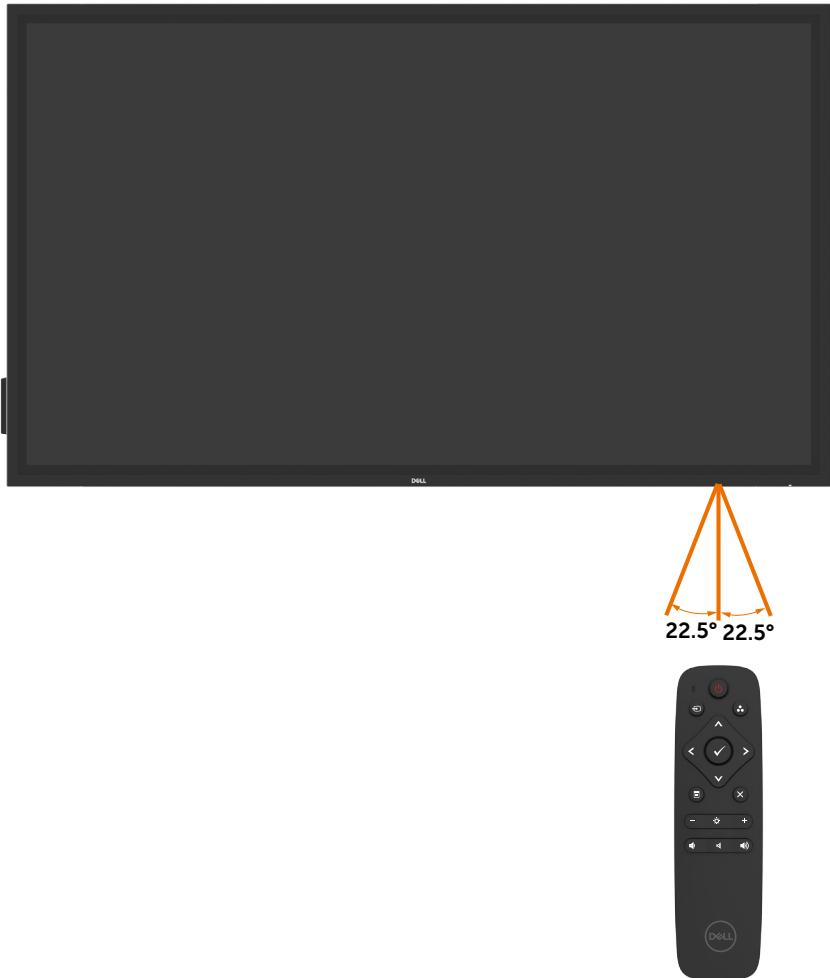


Operating range of the remote control

Point the top of the remote control toward the LCD display's remote sensor during button operation.

Use the remote control within a distance of about 7 m from remote control sensor or at a horizontal and vertical angle of within 22.5° within a distance of about 7 m.

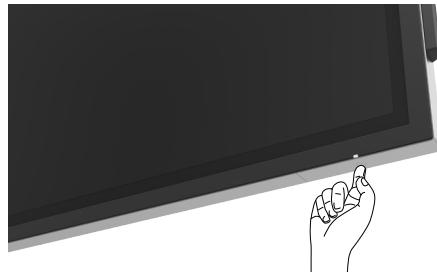
 **NOTE:** The remote control may not function properly when the remote control sensor on the display is under direct sunlight or strong illumination, or when there is an obstacle in the path of signal transmission.



Operating the Display

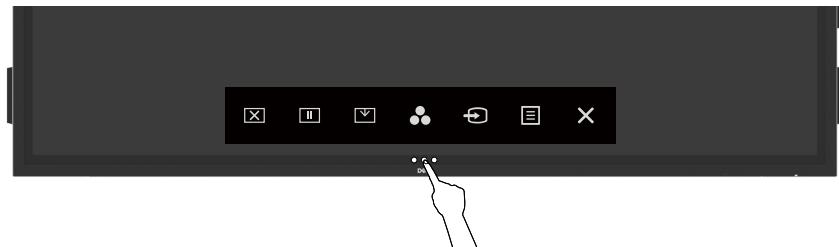
Turning on the Display

Press the **Power** button  to turn the display On and Off. The white LED indicates the display is On and fully functional. A glowing white LED indicates DPMS Power Save Mode.



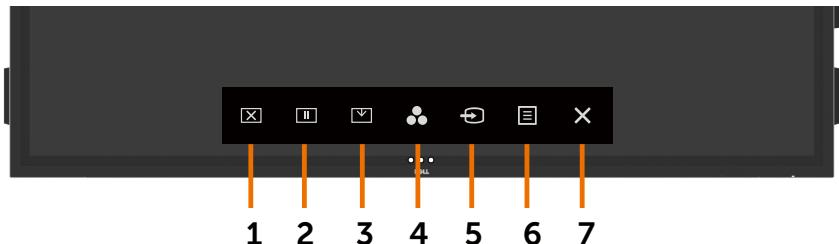
Touch OSD Launcher

This display comes with a touch OSD functionalities. Press the OSD launcher touch key to access the functionalities.



Using the Touch Control Launcher

Use the touch control icons on the front of the display to adjust the characteristics of the image being displayed. As you use these icons to adjust the controls, an OSD shows the numeric values of the characteristics as they change.



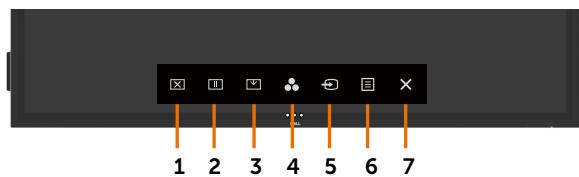
The following table describes the touch control icons:

Touch Control icons	Description
1	Use this icon to switch screen to black or white. Go to Menu to select screen off color. Use touch key  to screen restore.
2	To a freeze screen when press/activate. Use touch key  to screen restore.
3	Screen Drop Down so that you can easily reach the top of the image. Use touch key  to screen restore.
4	Use this icon to choose from a list of preset color modes.
5	Use this icon to choose from a list of Input Source.
6	Use this menu icon to launch the on-screen display (OSD) and select the OSD menu. See Accessing the Menu System .
7	Use this icon to go back to the main menu or exit the OSD main menu.

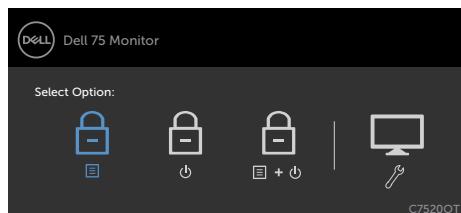


Using the OSD lock function

1. Press the OSD launcher touch key.



2. Touch and hold  for 5 seconds. you can see following select option:



The following table describes the touch control icons:

Options	Description
1	 OSD menu lock Use this icon to lock OSD menu function.
2	 Power-off button lock Use this icon to lock power button from powering off.
3	 OSD menu and power button lock Use this icon to lock OSD menu and power button from powering off.
4	 Built-in Diagnostics Use this icon to run the built-in diagnostics, see Built-in Diagnostics .



3. Touch and hold  for 5 seconds, touch  to unlock.

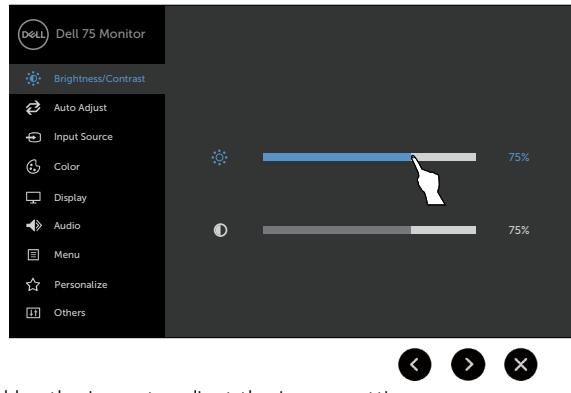


Using the On-Screen Display (OSD) Menu

Accessing the Menu System

 NOTE: Any changes you make using the OSD menu are automatically saved if you move to another OSD menu, exit the OSD menu, or wait for the OSD menu to disappear.

- 1 Press the  icon on the remote control or OSD Launcher touch key to launch the OSD menu.



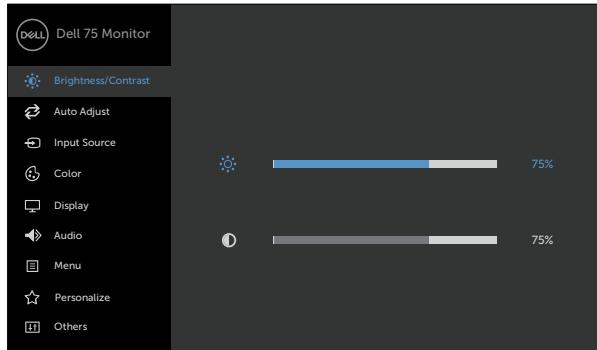
Use the icons to adjust the image settings.

Touch control icon	Description
1  Up  Down	Use the Up (increase) and Down (decrease) icons to adjust items in the OSD menu.
2  Left  Right	Use the Left (decrease) and Right (increase) icons to adjust items in the OSD menu.

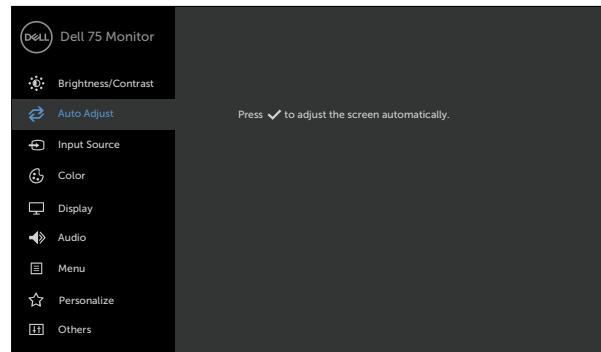


-
- 3**  Use the **OK** icon to confirm your selection.
- 4**  Use the **Back** icon to go back to the previous menu.
-

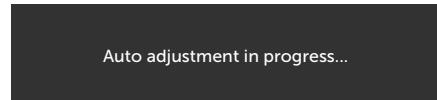
Touch OSD Control

Icon	Menu and Submenus	Description
	Brightness/Contrast	Use this menu to activate Brightness/Contrast adjustment.  
Brightness	Brightness adjusts the luminance of the backlight (minimum 0; maximum 100). Touch the  icon to increase brightness. Touch the  icon to decrease brightness.	
Contrast	Adjust the Brightness first, and then adjust Contrast only if further adjustment is necessary. Touch the  icon to increase contrast and Touch the  icon to decrease contrast (between 0 and 100). Contrast adjusts the difference between darkness and lightness on the display.	



Icon	Menu and Submenus	Description
	Auto Adjust	<p>Even though your computer recognizes your display on startup, the Auto Adjustment function optimizes the display settings for use with your particular setup.</p> <p>Auto Adjustment allows the display to self-adjust to the incoming video signal. After using Auto Adjustment, you can further tune your display by using the Pixel Clock (Coarse) and Phase (Fine) controls under Display menu.</p> 

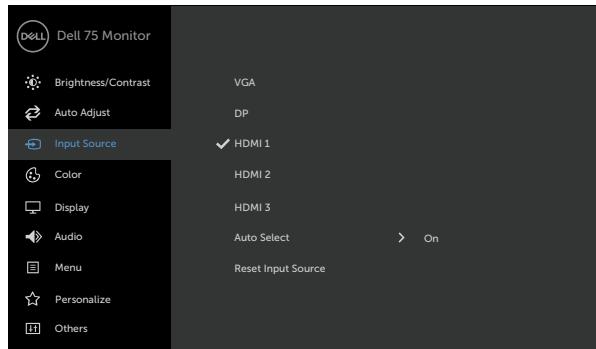
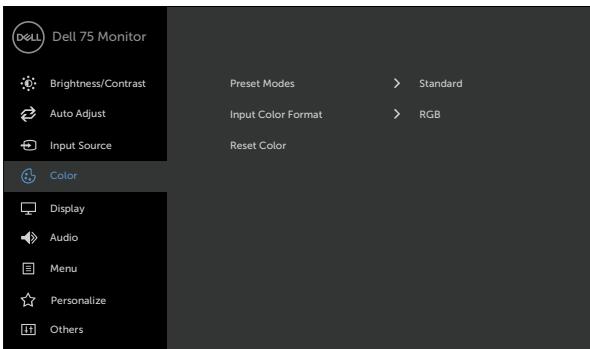
The following dialog appears on a black screen as the display automatically adjusts to the current input:



NOTE: In most cases, Auto Adjust produces the best image for your configuration.

NOTE: Auto Adjust feature option is only available when your display is connected using the VGA cable.



Icon	Menu and Submenus	Description
	Input Source	<p>Use the Input Source menu to select between different video inputs that are connected to your display.</p> 
	VGA	Select VGA input when you are using the VGA connector.
DP	Select DP input when you are using the DP (DisplayPort) connector.	
HDMI 1	Select the HDMI 1 input when you are using the HDMI 1 connector.	
HDMI 2	Select the HDMI 2 input when you are using the HDMI 2 connector.	
HDMI 3	Select the HDMI 3 input when you are using the HDMI 3 connector.	
Auto Select	Select Auto Select . the display scans for available input sources.	
Reset Input Source	Resets your display's Input Source settings to the factory defaults.	
	Color	<p>Use the Color menu to adjust the color setting mode.</p> 
		

Icon	Menu and Submenus	Description
	Preset Modes	When you select Preset Modes , you can choose Standard , ComfortView , Color Temp. or Custom Color from the list.

- **Standard:** Default color settings. This is the default preset mode.
- **ComfortView:** Decreases the level of blue light emitted from the screen to make viewing more comfortable for your eyes.

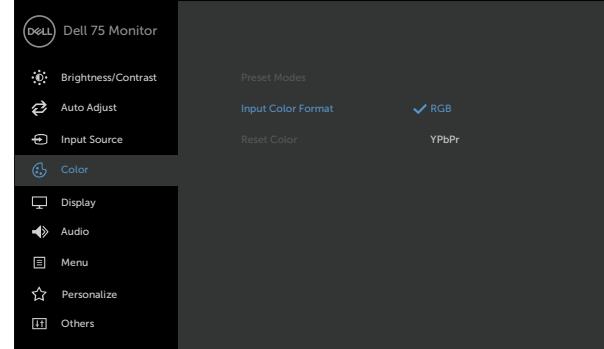
NOTE: To reduce the risk of eye strain and neck/arm/back/shoulders pain from using the display for long periods of time, we suggest you to :

- Set the screen about 20 to 28 inches (50-70 cm) from your eyes.
- Blink frequently to moisten or rewet your eyes when working with the display.
- Take regular and frequent breaks for 20 minutes every two hours.
- Look away from your display and gaze at a distant object at 20 feet away for at least 20 seconds during the breaks.
- Perform stretches to relieve tension in the neck/arm/back/shoulders during the breaks.

- **Color Temp.:** The screen appears warmer with a red/yellow tint with slider set at 5,000K or cooler with blue tint with slider set at 10,000K.
- **Custom Color:** Allows you to manually adjust the color settings.

Touch the and icons to adjust the Red, Green, and Blue values and create your own preset color mode.



Icon	Menu and Submenus	Description
Input Color Format	<p>Allows you to set the video input mode to:</p> <ul style="list-style-type: none"> • RGB: Select this option if your display is connected to a computer (or DVD player) using the HDMI, DP or VGA cable. • YPbPr: Select this option if your DVD player supports only YPbPr output. 	



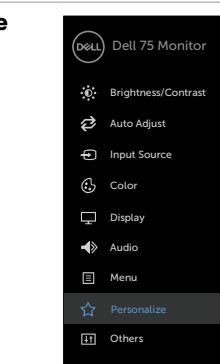
Reset Color Resets your display's color settings to the factory defaults.



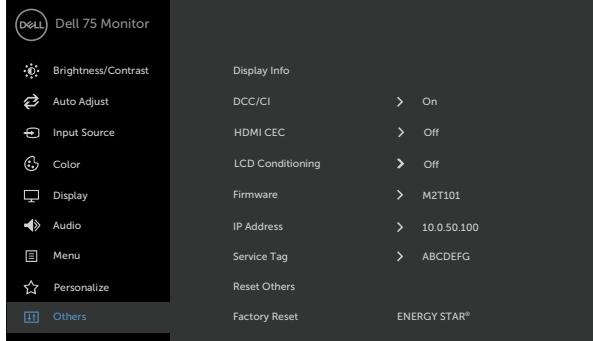
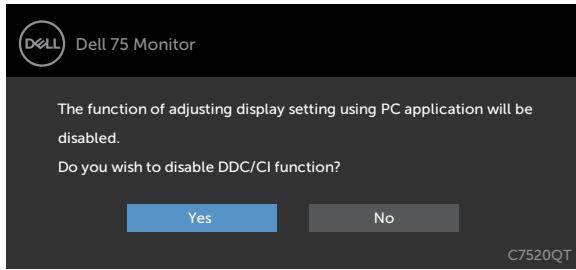
Icon	Menu and Submenus	Description
	Display	Use the Display menu to adjust image.
 Dell 75 Monitor  Brightness/Contrast  Auto Adjust  Input Source  Color  Display  Audio  Menu  Personalize  Others	<p>Aspect Ratio > Wide 16:9</p> <p>Horizontal Position</p> <p>Vertical Position</p> <p>Sharpness > 50</p> <p>Pixel Clock</p> <p>Phase</p> <p>Reset Display</p>	
Aspect Ratio	Adjust the image ratio to Wide 16:9 , 4:3 or 5:4 .	
Horizontal Position	Use  or  to adjust the image left or right.	
	Minimum is '0' (-).	
	Maximum is '100' (+).	
Vertical Position	Use  or  to adjust the image up or down.	
	Minimum is '0' (-).	
	Maximum is '100' (+).	
	NOTE: Horizontal Position and Vertical Position adjustments are only available for "VGA" input.	
Sharpness	Makes the image look sharper or softer.	
	Use  or  to adjust the sharpness from '0' to '100'.	
Pixel Clock	The Phase and Pixel Clock adjustments allow you to adjust your display to your preference.	
	Use the  or  icons to adjust for best image quality.	
	NOTE: Pixel Clock adjustments are only available for "VGA" input.	
Phase	If satisfactory results are not obtained using the Phase adjustment, use the Pixel Clock (coarse) adjustment and then use Phase (fine) again.	
	NOTE: Phase adjustments are only available for "VGA" input.	

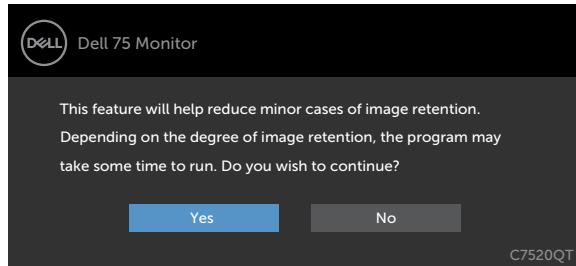
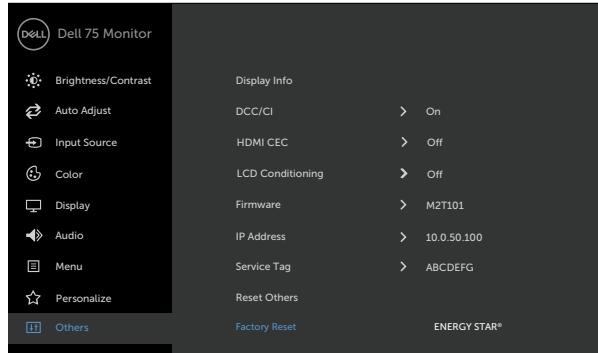


Icon	Menu and Submenus	Description
	Reset Display	Restores the display settings to factory defaults.
	Audio	
	Volume	Allows you to set the volume level of audio source.
		Use or to adjust the volume level from '0' to '100'.
Audio Source	Allows you to set the audio source to PC Audio or HDMI/DP .	
Speaker	Allows you to On or Off Speaker function.	
Reset Audio	Select this option to restore default audio settings.	
	Menu	Select this option to adjust the settings of the OSD, such as the languages of the OSD, the amount of time the menu remains on screen, and so on.

Icon	Menu and Submenus	Description														
	Language	Set the OSD display to one of eight languages. (English, Spanish, French, German, Brazilian Portuguese, Russian, Simplified Chinese, or Japanese).														
	Transparency	Select this option to change the menu transparency by using  and  icons (min. 0 / max. 100).														
	Timer	OSD Hold Time: Sets the time the OSD remains active after you press a button. Use the  and  icons to adjust the slider in 1-second increments, from 5 to 60 seconds.														
	Reset Menu	Restore the menu settings to factory defaults.														
	Personalize	 <table border="0"> <tr> <td data-bbox="508 573 661 597">Power Button LED</td> <td data-bbox="728 573 840 597">> On During Active</td> </tr> <tr> <td data-bbox="508 605 560 628">USB</td> <td data-bbox="728 605 851 628">> Off During Standby</td> </tr> <tr> <td data-bbox="508 636 605 660">Monitor Sleep</td> <td data-bbox="728 636 773 660">> On</td> </tr> <tr> <td data-bbox="508 668 661 692">Screen Drop Down Level</td> <td data-bbox="728 668 806 692">> 1/2 screen</td> </tr> <tr> <td data-bbox="508 700 638 724">Screen Off Color</td> <td data-bbox="728 700 784 724">> White</td> </tr> <tr> <td data-bbox="508 732 627 755">Wake On Touch</td> <td data-bbox="728 732 773 755">> Off</td> </tr> <tr> <td data-bbox="508 763 661 787">Reset Personalization</td> <td></td> </tr> </table>	Power Button LED	> On During Active	USB	> Off During Standby	Monitor Sleep	> On	Screen Drop Down Level	> 1/2 screen	Screen Off Color	> White	Wake On Touch	> Off	Reset Personalization	
Power Button LED	> On During Active															
USB	> Off During Standby															
Monitor Sleep	> On															
Screen Drop Down Level	> 1/2 screen															
Screen Off Color	> White															
Wake On Touch	> Off															
Reset Personalization																
		Power Button LED Allows you to set the state of the power light to save energy.														
	USB	Allows you to enable or disable USB function during display standby mode.														
		NOTE: USB ON/OFF under standby mode is only available when the USB upstream cable is unplugged. This option will be greyed out when the USB upstream cable plugs in.														
	Monitor Sleep	Select Off to turn off this feature.														
	Screen Drop Down Level	Allows you to set the Screen Drop Down level so that you can reach the top of the image.														
		Drop Down Level Options: - 1/2 Screen - 1/3 Screen - 2/3 Screen														



Icon	Menu and Submenus	Description
	Screen Off Color	Allows you to set the Screen Off Color to White or black .
	Wake On Touch	Select On to turn on this feature.
	Reset Personalization	Restores shortcut keys to factory defaults.
	Other	
		 Select this option to adjust the OSD settings, such as the DDC/CI , LCD conditioning , and so on.
	Display Info	Displays the display's current settings.
	DDC/CI	<p>DDC/CI (Display Data Channel/Command Interface) allows you to adjust the display settings using software on your computer. Select Off to turn off this feature. Enable this feature for best user experience and optimum performance of your display.</p> 
	HDMI CEC	Allows you to On or Off HDMI CEC function.

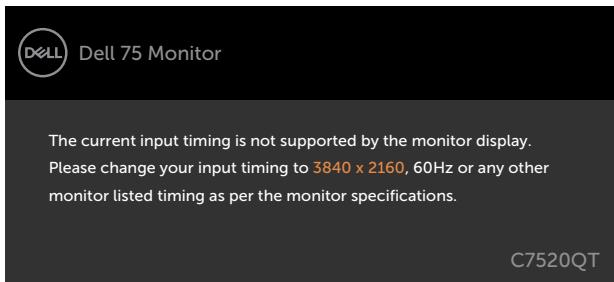
Icon	Menu and Submenus	Description
	LCD Conditioning	Helps reduce minor cases of image retention. Depending on the degree of image retention, the program may take some time to run. Select On to start the process.
		C7520QT
Firmware	Current Firmware version.	
IP Address	Show IP Address.	
Service Tag	Show Service Tag.	
Reset Others	Restores other settings, such as DDC/CI , to factory defaults.	
Factory Reset	Restores all preset values to the factory default settings. These are also the settings for ENERGY STAR® tests.	
		

 **NOTE:** This display has a built-in feature to automatically calibrate the brightness to compensate for LED aging.



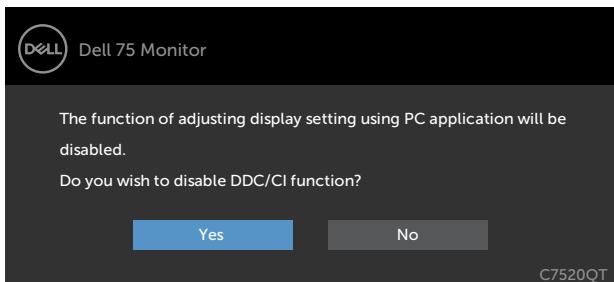
OSD Warning Messages

When the display does not support a particular resolution mode, you can see the following message:

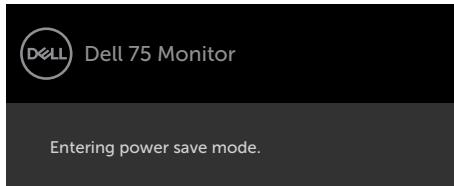


This means that the display cannot synchronize with the signal that it is receiving from the computer. See [Display Specifications](#) for the Horizontal and Vertical frequency ranges addressable by this display. Recommended mode is 3840 x 2160.

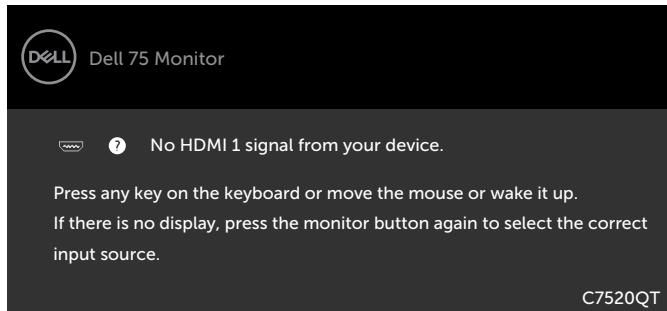
You can see the following message before the DDC/CI function is disabled:



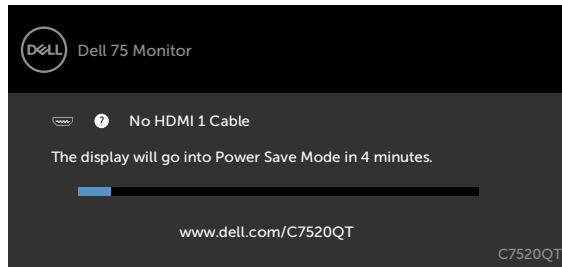
When the display enters the **Power Save** mode, the following message appears:



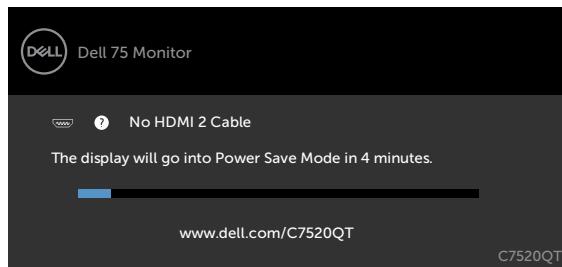
If you press any button other than the power button, the following messages will appear depending on the selected input:



If either HDMI 1, HDMI 2, HDMI 3, DP or VGA input is selected and the corresponding cable is not connected, a floating dialog box as shown below appears.

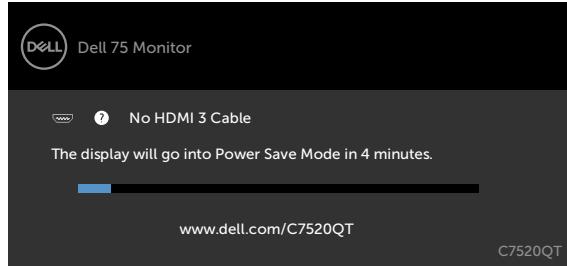


Or

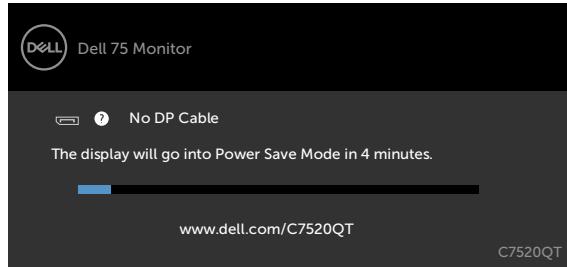


Or

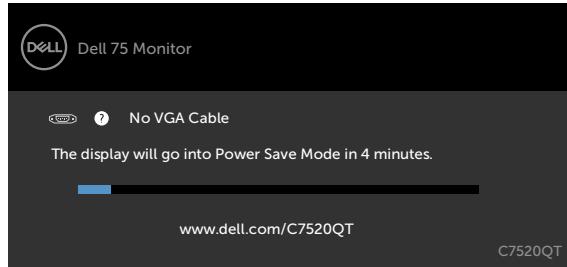




Or



Or

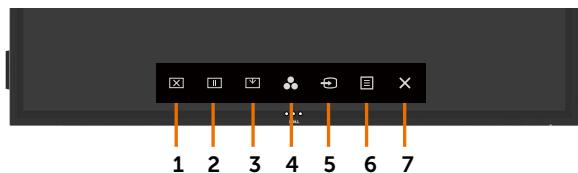


See [Troubleshooting](#) for more information.



Dell Web Management for Displays

Before accessing the Dell Display Web Management feature, ensure the Ethernet is working normally.



• Ethernet Enable

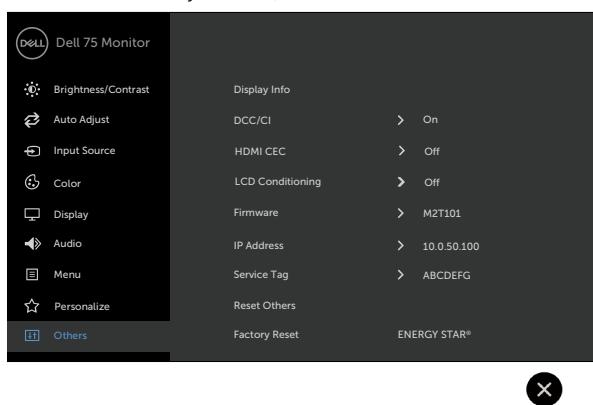
Touch and hold the **touch key 5** on the front panel for 4 seconds to turn on , A network icon appears and is shown on the center for 4 seconds.

• Ethernet Disable

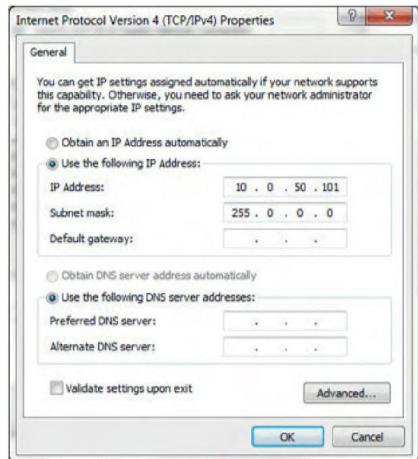
Touch and hold the **touch key 5** on the front panel for 4 seconds to turn off , A network icon appears and is shown on the center for 4 seconds.

To access the Dell Display Web Management tool you need to set the IP Addresses for your computer and the display.

1. Press the Menu key on the remote control to display the IP Address of the display, or by navigating to OSD Menu > Others. By default, the IP Address is 10.0.50.100



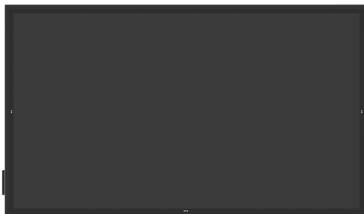
- 2.** In the computer's IP Properties tab, specify an IP Address by selecting Use the following IP Address and enter the following values: For IP Address: 10.0.50.101 and for Subnet Mask: 255.0.0.0 (leave all other entries as blanks).



- 3.** The IP Address configuration would now look like this:



Configure notebook IP Address to
10.0.50.101



Monitor IP Address
10.0.50.100

To access and use the web management tool, follow these steps:

1. Open a web browser and type the display's IP Address (10.0.50.100) in the address bar.
2. The log-in page opens. Enter the Administrator Password to continue.



3. The Home page opens:

The screenshot shows the Dell Monitor Web Management interface. At the top, there's a navigation bar with a Dell logo, the text "Monitor Web Management", and language selection "English". Below the bar, the main content area has a title "Home" and a sub-section "Monitor Information". It displays the following details:

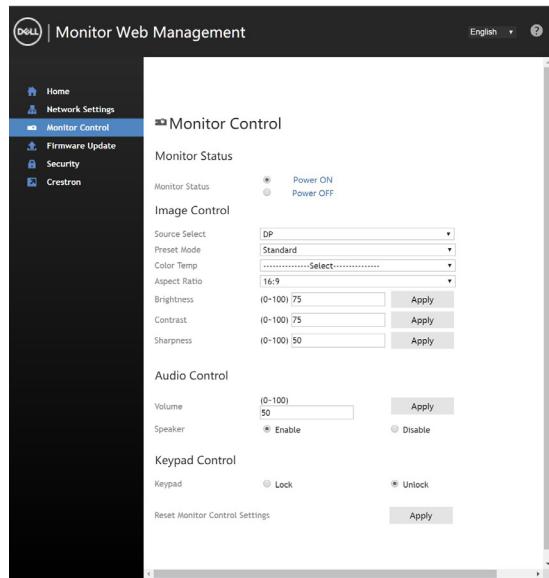
Model Name	Dell C7520QT
Monitor Name	[Empty]
Location	[Empty]
Contact	[Empty]
Network FW Version	0.05
IP Address	10.0.50.100
MAC Address	00:60:E9:23:00:A5
Monitor Status	ON

4. Click **Network Settings** tab to see the network settings.

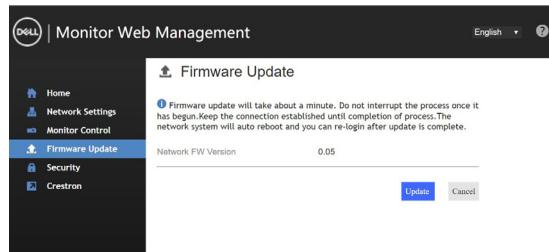
The screenshot shows the "Network Settings" page of the Dell Monitor Web Management interface. The left sidebar includes the "Network Settings" tab, which is currently selected. The main content area is titled "Network Adapter Properties" and contains fields for Model Name (Dell C7520QT), Monitor Name, Location, and Contact, each with an "Apply" button. Below this is the "IP Settings" section, which includes two radio buttons: "Obtain IP address automatically" (selected) and "Use the following IP address". Under "Use the following IP address", there are input fields for IP Address (10.0.50.100), Subnet Mask (255.255.0.0), Gateway (10.0.0.254), and DNS Server (168.95.1.1), each with an "Apply" button. There are also "Reset Network Settings" and "Apply" buttons at the bottom.



5. Click **Display Control to see the display's status.**



6. Update **Firmware.** You can download the latest drivers from the Dell Support website at www.dell.com/support.



7. Upgrade firmware page and wait for 30 seconds.

[Upgrade Firmware](#)

Please select a file (~.dld) to upgrade :

(Upgrading firmware may take 60 seconds)

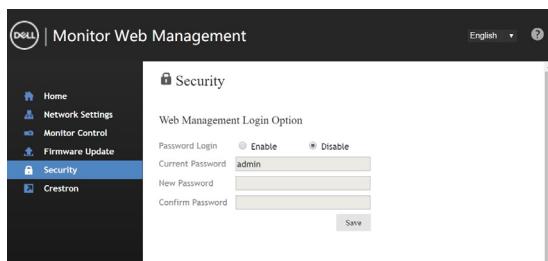
Upgrade must NOT be interrupted !



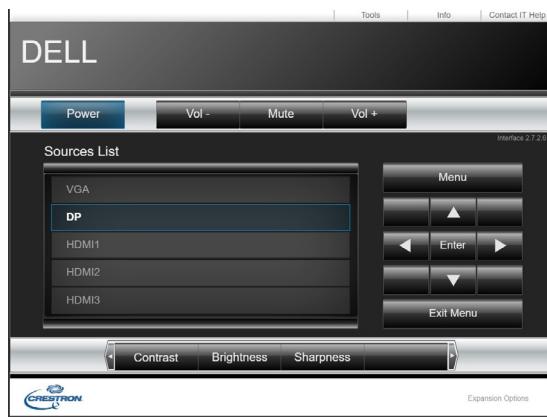
8. Finished. Click on button to proceed after 8 seconds.



9. Click **Security** to set a password.



10. Click **Crestron** to control interface.



Troubleshooting

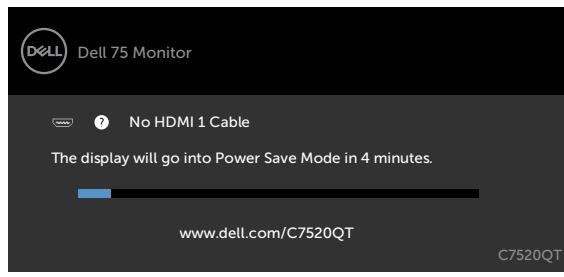
⚠ WARNING: Before you begin any of the procedures in this section, follow the Safety Instructions.

Self-Test

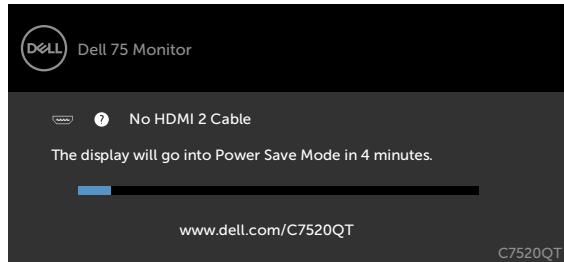
Your display provides a self-test feature that allows you to check whether your display is functioning properly. If your display and computer are properly connected but the display screen remains dark, run the display self-test by performing the following steps:

1. Turn off both your computer and the display.
2. Unplug the video cable from the back of the computer. To ensure proper Self-Test operation, remove all digital and the analog cables from the back of computer.
3. Turn on the display.

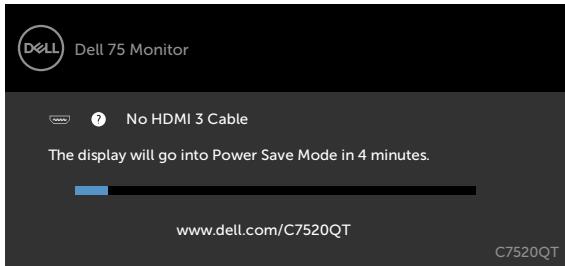
The floating dialog box should appear on-screen (against a black background), if the display cannot sense a video signal and is working correctly. While in self-test mode, the power LED remains white. Also, depending upon the selected input, one of the dialogs shown below will continuously scroll through the screen.



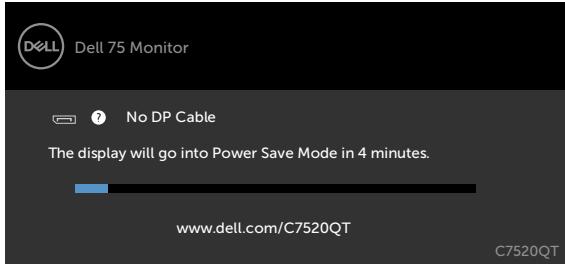
or



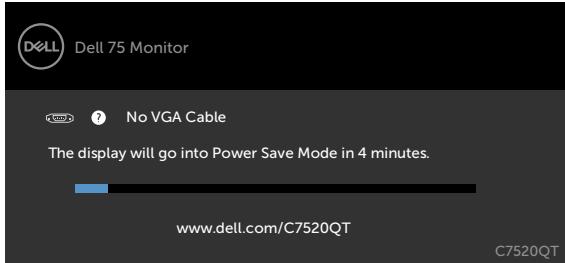
Or



Or



Or



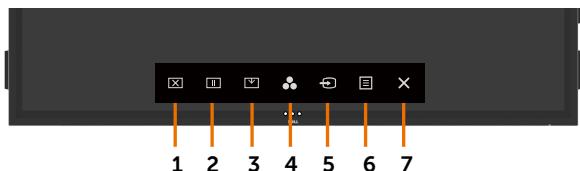
- 4.** This box also appears during normal system operation, if the video cable becomes disconnected or damaged.
- 5.** Turn off your display and reconnect the video cable; then turn on both your computer and the display.

If your display screen remains blank after you use the previous procedure, check your video controller and computer, because your display is functioning properly.



Built-in Diagnostics

Your display has a built-in diagnostic tool that helps you determine if the screen abnormality you are experiencing is an inherent problem with your display, or with your computer and video card.



To run the built-in diagnostics:

1. Make sure that the screen is clean (no dust particles on the surface of the screen).
2. Touch and hold **X** for 5 seconds in lock Select Option. Touch the self-inspection icon A gray screen appears.
3. Carefully inspect the screen for abnormalities.
4. Touch the front panel. The color of the screen changes to red.
5. Inspect the display for any abnormalities.
6. Repeat steps 4 and 5 to inspect the display in green, blue, black, white, and text screens.

The test is complete when the text screen appears. To exit, touch panel again.

If you do not detect any screen abnormalities upon using the built-in diagnostic tool, the display is functioning properly. Check the video card and computer.



Common Problems

The following table contains general information about common display problems you might encounter and the possible solutions:

 NOTE: Auto Adjust function is applicable to VGA input only.

Common Symptoms	What You Experience	Possible Solutions
No Video/Power LED off	No picture	<ul style="list-style-type: none">• Ensure that the video cable connecting the display and the computer is properly connected and secure.• Verify that the power outlet is functioning properly using any other electrical equipment.• Ensure that the power button is depressed fully.• Ensure that the correct input source is selected in the Input Source menu.
No Video/Power LED on	No picture or no brightness	<ul style="list-style-type: none">• Increase brightness & contrast controls via OSD.• Perform display self-test feature check.• Check for bent or broken pins in the video cable connector.• Run the built-in diagnostics.• Ensure that the correct input source is selected in the Input Source menu.
Poor Focus	Picture is fuzzy, blurry, or ghosting	<ul style="list-style-type: none">• Perform Auto Adjust via OSD.• Adjust the Phase and Pixel Clock controls via OSD.• Eliminate video extension cables.• Reset the display to factory settings.• Change the video resolution to the correct aspect ratio.
Shaky/Jittery Video	Wavy picture or fine movement	<ul style="list-style-type: none">• Perform Auto Adjust via OSD.• Adjust the Phase and Pixel Clock controls via OSD.• Reset the display to factory settings.• Check environmental factors.• Relocate the display and test in another room.
Missing Pixels	LCD screen has spots	<ul style="list-style-type: none">• Cycle power on-off.• Pixel that is permanently off is a natural defect that can occur in LCD technology.• For more information on Dell Display Quality and Pixel Policy, see Dell Support site at: http://www.dell.com/support.monitors.
Stuck-on Pixels	LCD screen has bright spots	<ul style="list-style-type: none">• Cycle power On-Off.• Pixel that is permanently off is a natural defect that can occur in LCD technology.• For more information on Dell Display Quality and PixelPolicy, see Dell Support site at: http://www.dell.com/support.monitors.



Common Symptoms	What You Experience	Possible Solutions
Brightness Problems	Picture too dim or too bright	<ul style="list-style-type: none"> Reset the display to factory settings. Auto Adjust via OSD. Adjust brightness & contrast controls via OSD.
Audio problem	No Audio	<ul style="list-style-type: none"> Check PC setting if the playback is correctly selected. Checking other video cables. Ensure that the Speaker is enabled via OSD
Geometric Distortion	Screen not centered correctly	<ul style="list-style-type: none"> Reset the display to factory settings. Auto Adjust via OSD. Adjust horizontal & vertical controls via OSD.
Horizontal/Vertical Lines	Screen has one or more lines	<ul style="list-style-type: none"> Reset the display to factory settings. Perform Auto Adjust via OSD. Adjust Phase and Pixel Clock controls via OSD. Perform display self-test feature check and determine if these lines are also in self-test mode. Check for bent or broken pins in the video cable connector. Run the built-in diagnostics.
Synchronization Problems	Screen is scrambled or appears torn	<ul style="list-style-type: none"> Reset the display to factory settings. Perform Auto Adjust via OSD. Adjust Phase and Pixel Clock controls via OSD. Perform display self-test feature check to determine if the scrambled screen appears in self-test mode. Check for bent or broken pins in the video cable connector. Restart the computer in safe mode.
Safety Related Issues	Visible signs of smoke or sparks	<ul style="list-style-type: none"> Do not perform any troubleshooting steps. Contact Dell immediately.
Intermittent Problems	Display malfunctions on & off	<ul style="list-style-type: none"> Ensure that the video cable connecting the display to the computer is connected properly and is secure. Reset the display to factory settings. Perform display self-test feature check to determine if the intermittent problem occurs in self-test mode.
Missing Color	Picture missing color	<ul style="list-style-type: none"> Perform display self-test. Ensure that the video cable connecting the display to the computer is connected properly and is secure. Check for bent or broken pins in the video cable connector.
Wrong Color	Picture color not good	<ul style="list-style-type: none"> Change the settings of the Preset Modes in the Color menu OSD depending on the application. Adjust R/G/B value under Custom. Color in Color menu OSD. Change the Input Color Format to PC RGB or YPbPr in the Color menu OSD. Run the built-in diagnostics.



Common Symptoms	What You Experience	Possible Solutions
Image retention from a static image left on the display for a long period of time	Faint shadow from the static image displayed appears on the screen	<ul style="list-style-type: none"> Use the Power Management feature to turn off the display at all times when not in use (for more information, see Power Management Modes). Alternatively, use a dynamically changing screensaver.
Touchscreen non-responsive	Display cannot wake on touch	<ul style="list-style-type: none"> Ensure Wake On Touch is enabled via OSD. Wake On Touch is default off.

Product Specific Problems

Specific Symptoms	What You Experience	Possible Solutions
Screen image is too small	Image is centered on screen, but does not fill entire viewing area	<ul style="list-style-type: none"> Check the Aspect Ratio setting in the Display menu OSD. Reset the display to factory settings.
Cannot adjust the display with touch OSD	OSD does not appear on the screen	<ul style="list-style-type: none"> Turn off the display, unplug the display power cable, plug it back, and then turn on the display. Check whether the OSD menu is locked. If yes, touch  icon for 4 seconds to unlock .
No Input Signal when user controls are pressed	No picture, the LED light is white	<ul style="list-style-type: none"> Check the signal source. Ensure the computer is not in the power saving mode by moving the mouse or pressing any key on the keyboard. Check whether the signal cable is plugged in properly. Re-plug the signal cable if necessary. Reset the computer or video player.
The picture does not fill the entire screen	The picture cannot fill the height or width of the screen	<ul style="list-style-type: none"> Due to different video formats (aspect ratio) of DVDs, the display may display in full screen. Run the built-in diagnostics.



Touchscreen Problems

Specific Symptoms	What You Experience	Possible Solutions
Touch report error	Touch function miss alignment or no touch function	<ul style="list-style-type: none">• Use the Dell provided USB cable to connect your computer.• Make sure the power cable has a ground pin.• Unplug and replug the power cable to allow initialization of the touch module.• Make sure computer supports USB 2.0 or later.• If the display cannot be detected by the computer, power off/on the monitor or unplug and replug the USB cable.
Touchscreen non-responsive in power-save mode	Cannot wake up display and computer by using touch in power-save mode	<ul style="list-style-type: none">• Access Device Manager, expand HID Interface Device under Human Device.• Right click HID-compliant device, click Properties and select the check-box to allow the device to wake the computer.• Check Display OSD 'Wake on touch' setting is enabled.

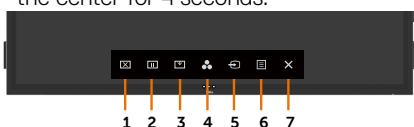
Universal Serial Bus (USB) Specific Problems

Specific Symptoms	What You Experience	Possible Solutions
USB interface is not working	USB peripherals are not working	<ul style="list-style-type: none">• Check that your display is turned ON.• Reconnect the upstream cable to your computer.• Reconnect the USB peripherals (downstream connector).• Switch off and then turn on the display again.• Reboot the computer.• Some USB devices like external portable HDD require higher electric current; connect the device directly to the computer system.
SuperSpeed USB 3.0 interface is slow.	SuperSpeed USB 3.0 peripherals working slowly or not working at all	<ul style="list-style-type: none">• Check that your computer is USB 3.0-capable.• Some computers have USB 3.0, USB 2.0, and USB 1.1 ports. Ensure that the correct USB port is used.• Reconnect the upstream cable to your computer.• Reconnect the USB peripherals (downstream connector).• Reboot the computer.



Specific Symptoms	What You Experience	Possible Solutions
Wireless USB peripherals stop working when a USB 3.0 device is plugged in	Wireless USB peripherals responding slowly or only working as the distance between itself and its receiver decreases	<ul style="list-style-type: none"> Increase the distance between the USB 3.0 peripherals and the wireless USB receiver. Position your wireless USB receiver as close as possible to the wireless USB peripherals. Use a USB-extender cable to position the wireless USB receiver as far away as possible from the USB 3.0 port.
USB is not working	No USB functionalities	Refer to input source and USB pairing table.

Ethernet Problems

Specific Symptoms	What You Experience	Possible Solutions
Ethernet not working	Dell Web Management for Displays Webpage control is not working	<ul style="list-style-type: none"> Ensure that the Network cable connecting the Display is properly secured. Touch the icon 5 on the screen for 4 seconds to turn on , A network icon  appears and is shown on the center for 4 seconds . Touch the icon 5 on the front panel for 4 seconds to turn off, A network icon  appears and is shown on the center for 4 seconds.  <p>1 2 3 4 5 6 7</p>



Appendix

Safety Instructions

For displays with glossy bezels the user should consider the placement of the display as the bezel may cause disturbing reflections from surrounding light and bright surfaces.

 **WARNING:** Use of controls, adjustments, or procedures other than those specified in this documentation may result in exposure to shock, electrical hazards, and/or mechanical hazards.

For information on safety instructions, see the Safety, Environmental, and Regulatory Information (SERI).

FCC Notices (U.S. only) and Other Regulatory Information

For FCC notices and other regulatory information, see the regulatory compliance website located at www.dell.com/regulatory_compliance.

Contacting Dell

 NOTE: If you do not have an active Internet connection, you can find contact information on your purchase invoice, packing slip, bill, or Dell product catalog.

Dell provides several online and telephone-based support and service options. Availability varies by country and product, and some services may not be available in your area.

To get online Display support content:

See www.dell.com/support/monitors.

To contact Dell for sales, technical support, or customer service issues:

1. Go to www.dell.com/support.
2. Verify your country or region in the Choose A Country/Region drop-down menu at the top-left corner of the page.
3. Click Contact Us next to the country dropdown.
4. Select the appropriate service or support link based on your need.
5. Choose the method of contacting Dell that is convenient for you.



Setting Up Your Display

Setting Display Resolution to 3840 x 2160 (maximum)

For best performance, set the display resolution to 3840 x 2160 pixels by performing the following steps:

In Windows 7, Windows 8 or Windows 8.1:

1. For Windows 8 or Windows 8.1 only, select the Desktop tile to switch to classic desktop.
2. Right-click on the desktop and click **Screen Resolution**.
3. Click the Dropdown list of the Screen Resolution and select 3840 x 2160.
4. Click **OK**.

In Windows 10:

1. Right-click on the desktop and click **Display Settings**.
2. Click **Advanced display settings**.
3. Click the dropdown list of Resolution and select 3840 x 2160.
4. Click **Apply**.

If you do not see the recommended resolution as an option, you may need to update your graphics driver. Please choose the scenario below that best describes the computer system you are using, and follow the given steps.

Dell computer

1. Go to www.dell.com/support, enter your service tag, and download the latest driver for your graphics card.
2. After installing the drivers for your graphics adapter, attempt to set the resolution to 3840 x 2160 again.

 **NOTE:** If you are unable to set the resolution to 3840 x 2160, please contact Dell to inquire about a graphics adapter that supports these resolutions.



Non-Dell computer

In Windows 7, Windows 8 or Windows 8.1:

1. For Windows 8 or Windows 8.1 only, select the Desktop tile to switch to classic desktop.
2. Right-click on the desktop and click Personalization.
3. Click **Change Display Settings**.
4. Click **Advanced Settings**.
5. Identify your graphics controller supplier from the description at the top of the window (e.g. NVIDIA, ATI, Intel etc.).
6. Refer to the graphic card provider website for updated driver (for example, <http://www.ATI.com> or <http://www.NVIDIA.com>).
7. After installing the drivers for your graphics adapter, attempt to set the resolution to 3840 x 2160 again.

In Windows 10:

1. Right-click on the desktop and click **Display Settings**.
2. Click **Advanced display settings**.
3. Click **Display adapter properties**.
4. Identify your graphics controller supplier from the description at the top of the window (e.g. NVIDIA, ATI, Intel etc.).
5. Refer to the graphic card provider website for updated driver (for example, <http://www.ATI.com> or <http://www.NVIDIA.com>).
6. After installing the drivers for your graphics adapter, attempt to set the resolution to 3840 x 2160 again.

 **NOTE:** If you are unable to set the recommended resolution, please contact the manufacturer of your computer or consider purchasing a graphics adapter that supports the video resolution.



Maintenance Guidelines

Cleaning Your Display

 **WARNING:** Before cleaning the display, unplug the display power cable from the electrical outlet.

 **CAUTION:** Read and follow the [Safety Instructions](#) before cleaning the display.

For best practices, follow these instructions in the list below while unpacking, cleaning, or handling your display:

- To clean your anti-static screen, lightly dampen a soft, clean cloth with water. If possible, use a special screen-cleaning tissue or solution suitable for the anti-static coating. Do not use benzene, thinner, ammonia, abrasive cleaners, or compressed air.
- Use a lightly-dampened, soft cloth to clean the display. Avoid using detergent of any kind as some detergents leave a milky film on the display.
- If you notice white powder when you unpack your display, wipe it off with a cloth.
- Handle your display with care as a darker-colored display may get scratched and show white scuff marks more than a lighter-colored display.
- To help maintain the best image quality on your display, use a dynamically changing screen saver and turn off your display when not in use.

